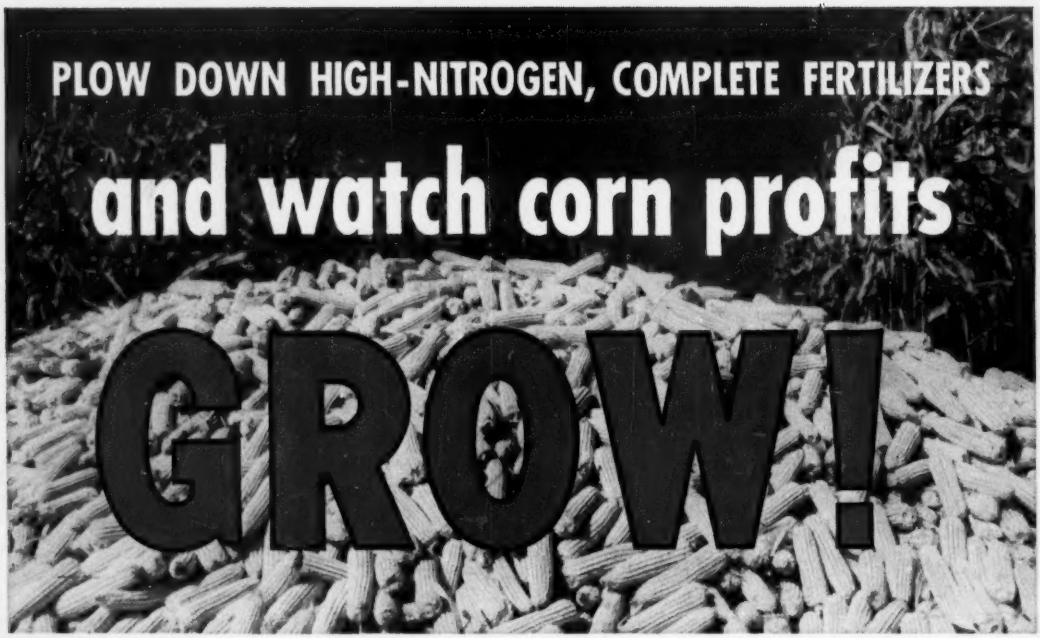
COMMERCIAL FERTILIZER

CONSOLIDATED WITH THE FERTILIZER GREEN BOOK



This illustration and headline are from a Barrett farm magazine advertisement appearing in the Midwest and Northeast, recommending liberal and deep application of high-nitrogen, complete fertilizers to feed the corn crop from START to FINISH!

In the past, most corn growers have been doing a good job of "starting the crop," by applying small amounts of fertilizer, banded at planting time. That's a profitable investment. But it's not enough to produce big yields. More and better fertilizer is needed to START the crop and GROW it too! Plenty of high-nitrogen, complete fertilizer—plowed down or drilled deep before planting time—will keep corn green and growing throughout the season and produce an abundance of well-filled, plump ears. Well-fertilized corn matures earlier and yields many more bushels of better quality corn with a much higher protein content.

By bringing these facts to the attention of farmers, we trust that Barrett advertising will help to increase your sales of high-nitrogen, complete fertilizers.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y. • RICHMOND 19, VA. • SOUTH POINT, OHIO
HOPEWELL, VA. • ATLANTA 3, GA. • COLUMBIA 1, S. C. • SAN FRANCISCO 3, CAL.

Barrett® NITROGEN

The Element that Makes Plants Grow

*Reg. U. S. Pat. Off.

serving over 100 principal industries
through ***AA Quality*** factories and sales offices

Air view of A.A.C. plant at Detroit, Mich. . . . 31 A.A.C. factories and sales offices, most of them in or near principal industrial centers, assure dependable service.

AA Quality

for over 85 years
a symbol of quality
and reliability

principal *AA Quality* products

All grades of Florida Pebble Phosphate Rock
AA QUALITY Ground Phosphate Rock
All grades of Commercial Fertilizers
Superphosphate — Sulphuric Acid
Insecticides and Fungicides
Phosphoric Acid and Phosphates
Phosphorous and Compounds of Phosphorus
Fluosilicates — Salt Cake
Gelatin — Bone Products
Ammonium Carbonate

THE AMERICAN AGRICULTURAL CHEMICAL COMPANY

GENERAL OFFICE: 50 CHURCH STREET, NEW YORK 7, N. Y.

31 FACTORIES AND SALES OFFICES, SERVING U. S., CANADA AND CUBA—ASSURE DEPENDABLE SERVICE

IT'S

GROWING SEASON

FOR FERTILIZER "PLANTS"

Never was the farmer more conscious of quality in the fertilizers he buys than today. Because they cut costs of production and increase yields, quality fertilizers are in demand now as never before. Fertilizer manufacturers who put real quality into their goods find that their fertilizer plants grow just as surely as the crops in the farmers' fields.

There is no higher quality source of nitrogen than SMIROW TANKAGE. SMIROW TANKAGE is 100% natural organic. It is 90% water insoluble and 90% available. It is always in perfect mechanical condition and uniform both in texture and color.

Correct proportions of SMIROW TANKAGE in your fertilizers assure the quality that makes a year-'round "growing season" for fertilizer manufacturers who use it.

To help make your sales grow, write for samples and prices.

SMIROW

TANKAGE

Makes Plants GROW!

SMITH-ROWLAND COMPANY

Norfolk, Virginia — Chemical, Illinois

POTASH
TRONA
SALTS

Trona
Muriate of Potash

This vitally important ingredient of mixed fertilizer provides the soil nutrient necessary to resist plant diseases and to enhance the productivity of crops. To obtain the best results, specify "Trona" Muriate of Potash . . . made by the pioneer producers in America.

Three Elephant
Agricultural Pentahydrate
Borax

Contains a minimum of 44% B_2O_3, or approximately 121% equivalent Borax. More economical in this concentrated form when used as an addition to fertilizer or for direct application to the soil, to correct a deficiency of Boron. Consult your local County Agent or State Experimental Station.

AMERICAN POTASH & CHEMICAL CORPORATION

122 EAST 42nd STREET • • • NEW YORK 17, N. Y.

231 S. LA SALLE STREET, CHICAGO 4, ILLINOIS
214 WALTON BUILDING, ATLANTA 3, GEORGIA
3030 WEST SIXTH STREET, LOS ANGELES 54, CALIF.

HERE'S SOMETHING

New!

Twin
Measuring Tanks
Pipe, Valves, and Fittings
— from —
TULL

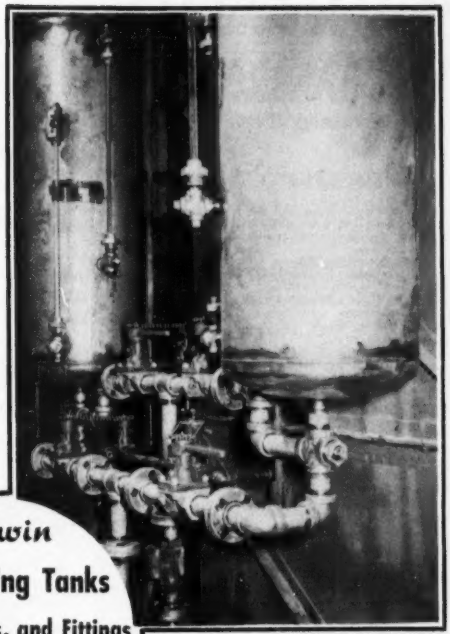


Photo: ETIWAN FERTILIZER COMPANY
Charleston, S. C.

Handling Nitrogen Solutions is easy, this proven low-cost way

. . . And here's why. Standard aluminum pipe, valves and fittings designed for service in the corrosive atmosphere of your plant are "on the shelf" stock items with Tull.

Whether you use the Twin Measuring Tanks or a single unit; you want an easy-to-install, trouble-free operating unit.

Aluminum solution lines, with aluminum fittings and valves, insure a trouble-free installation. Twin measuring tanks, have the additional capacity to insure sixty tons per hour output, for each one ton mixer. There's no additional labor involved, no "extra motions" are required on the part of the operator; and in addition, the "wetting" is complete. This means less tendency for bag-set, higher test fertilizer, and more efficient use of chemical because the ventage from the tank being filled, goes into the mixer while the solution flows from the tank being used.

Need more information? *See your solution representative, or write for free booklet.* No obligation involved, of course.

J. M. TULL METAL & SUPPLY CO., INC.

285 MARIETTA ST., N. W. • ATLANTA 3, GEORGIA

COMMERCIAL FERTILIZER

ESTABLISHED 1910

January, 1952

Vol. 84, No. 1

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Phone REPUBLIC 1-3050

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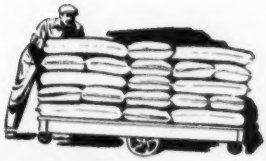
NO. 3
OF A SERIES
ON HOW TO

Stretch a MULTIWALL Paper Bag

Kraft paper supplies are short. So it is important for you to get the best use from your multiwalls. Here are some of the ways to stretch them . . .



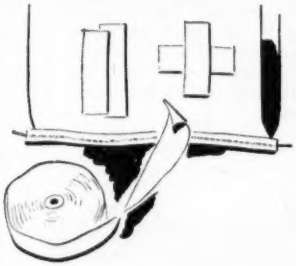
Use of Hand Trucks . . . Trucks (and chutes and conveyors) should be free of protruding nails, splinters, etc.

Two-wheel trucks should have wide, extended lips, as narrow-blade lips cut into the sacks. Wood or metal lip extensions may be added. Sacks should be piled flat. Small wooden pallets may be used if the truck lip is adequate.

On four-wheel trucks, sacks should be stacked flat and even with the truck edges, with the end sacks interlocked.

How to Lift and Carry . . . One man should pick up the sack with his hands underneath it, preferably at diagonal corners. Two men should lift the sack with the hands underneath it, supporting the four corners.

Never grip or pull at the corners. Never drag the sack across the floor. Never, with a tied closure, pull at the closed end. Carry the sack with the edge resting against the body, or flat on the shoulder.



How to Repair or Oversilp Damaged Bags

If seriously damaged, slip an overslip over the damaged bag (with contents intact), then close with a wire-tie or string, or roll the top down and staple it.

If the damage is minor, or an overslip is not available: **1.** Straighten paper near the tear; place torn ply or plies in original position; clean off any loose material or dirt. **2.** Apply moistened gummed tape, cut 4 or 5 inches longer than the tear. Use single, overlapping, or crossed patches, depending on size and kind of tear. **3.** If more than one ply is severely ruptured, patch each ply separately.

A 3-inch, 40-lb. or 50-lb. gummed kraft tape is satisfactory. Carry repaired sacks with the patched side up.

Want the Whole Story?

Ask your Bemis Man for free, illustrated copy of Bemis Multiwall Packaging Guide. It deals with Storage, Filling and Closing, Handling, Palletizing and other important subjects.

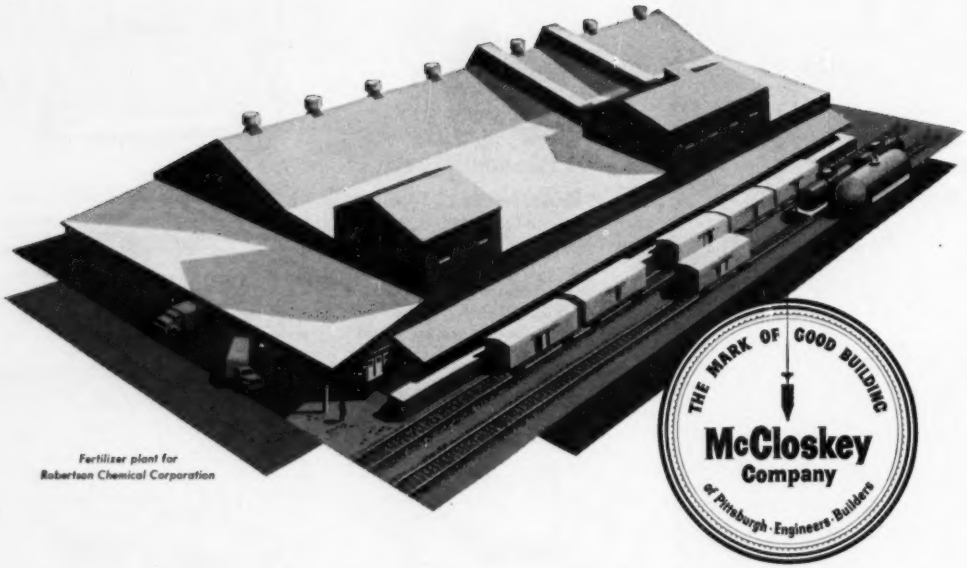
• • •

Maybe Cotton Bags are Your Answer . . . if you can't get all of the multiwalls you need. Cotton bags are available . . . and Bemis is the leading cotton bag source.

Bemis

BEMIS BRO BAG COMPANY

St. Louis 2, Missouri



Fertilizer plant for Robertson Chemical Corporation

You Get Sound Design, Efficient Construction With McCloskey Fertilizer Plants

The design of your plant is based upon sound engineering principles when you retain McCloskey to plan and erect your new fertilizer processing unit. For, back of "The Mark of Good Building" is the experience gained in designing a number of fertilizer plants which is reflected in our modern approach to the many specialized problems involved in such an operation.

The design helps combat the destructive effects of corrosion—ample room for overhead conveyors is provided by elimination of outdated truss construction—high stacking of material is made practicable —the need for a plant of eccentric shape is provided for. All these vital elements of design are included in your plant when you retain McCloskey to plan and develop your expansion program.

The construction of your new plant gets under way fast when directed by our field engineers. They employ many cost-reducing and time-saving methods that mean your plant is ready for operation faster, your total investment is less than you would expect. You have no details to worry about, the entire project is covered by your one contract with McCloskey.

Some of the best names in the fertilizer industry use McCloskey design and construction service again and again in planning and completing their expansion programs. It will pay you, while your plans are still in the thinking stage to draw upon our experience—you will find it invaluable. Without obligation, we invite you to ask for a consultation. Write McCloskey Company of Pittsburgh, 3412 Liberty Ave., Pittsburgh 1, Pennsylvania.

McCloskey Company

of Pittsburgh

Engineers - Builders

to give farmers
the most for their
fertilizer dollars
put

U·S·S AMMONIUM SULPHATE

in your high-analysis mixes

. . . because high-analysis fertilizers pay off handsomely for everybody involved. The bigger yields they give farmers mean better future business for you and your dealers.

High-analysis fertilizers give the best performance when U·S·S Ammonium Sulphate provides a major share of the nitrogen content. This dry, free-running material stands up in storage . . . mixes well with other fertilizer ingredients . . . is a drillable fertilizer material.

Its "all-ammonia" nitrogen won't leach out of soil, yet it converts to readily-available form in the growing season.

Demand for high-analysis fertilizers will be heavy this spring . . . for row fertilizers in corn planting and for dressing on small grains and pastures. Be ready for your share of this business. United States Steel Company, 525 William Penn Place, Pittsburgh 30, Pa.

U·S·S AMMONIUM SULPHATE

USS TRADE MARK

UNITED STATES STEEL COMPANY

JUST AROUND THE CORNER

BY VERNON MOUNT

ELECTION YEAR used to be a year of uncertainty. Now it is a year, you can depend on it, when all the arts of economic maneuver are employed to make things look good for the Ins. And there are plenty of things that can be done, with your money to back the enterprise.

A GOOD YEAR businesswise lies ahead. Exceptions of course, but with the defense establishment rolling high, wide and handsome; with payrolls mounting to make the most terrific market for merchandise we've ever known; how can it be otherwise. As to profits...that's a horse of a different color. But Happy New Year to you.

Yours faithfully,

Vernon Mount

DAVIDSON-KENNEDY CO.

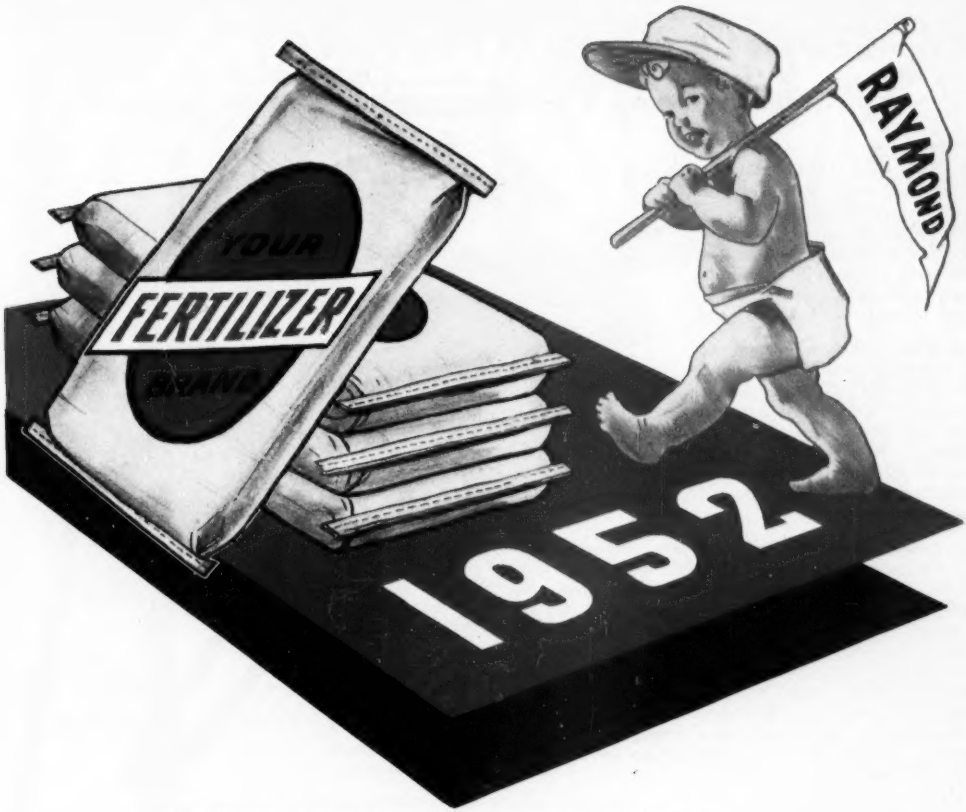
Is now manufacturing a complete line of fertilizer equipment in addition to their well established oil mill machinery business.

Cluster Hoppers
Foot Breakers
Elevating & Conveying Equipment
Head Breakers
Double Deck Shaker Screens
Automatic Ammonia Weighing Systems
Pulverizers
Batch Mixers

We Welcome Your Inquiries

Write for Information

1090 Jefferson St., N. W. Atlanta, Georgia



Again, in 1952, carloads of fertilizers will be packed and shipped in . . .

RAYMOND MULTI-WALL PAPER SHIPPING SACKS

These tough, strong, dependable Raymond Shipping Sacks are CUSTOM BUILT to specifications.

They are manufactured in various types, sizes, and strengths. Available printed in multi-colors or plair

Raymond Multi-Wall Paper Shipping Sacks are made of one or more walls of heavy, specially prepared Kraft paper, with sewn or pasted end, valve or open mouth. This construction assures ample protection to contents from tears, snags, moisture penetration, and rough handling. They're DUST-PROOF! SIFT-PROOF! WATER-RESISTANT!

Make 1952 a banner year. Pack and ship your products in Raymond Multi-Wall Paper Shipping Sacks—*the quality Shipping Sacks that always make a good product better.*

THE RAYMOND BAG COMPANY, Middletown, Ohio

RAYMOND MULTI-WALL PAPER SHIPPING SACKS

Why You Get More Yield Per Ton — More Tons Per Day with these Scales . . .

EXACT WEIGHT Sacking Scales bag, weigh and check in one operation. They handle all free flowing chemicals that will flow from a hopper and ship in a sack. Scales will accommodate multi-wall paper, paper lined, cotton or burlap bags.

With these scales, one man can fill and weigh a hundred pound sack in eight to ten seconds. This rate is with ordinary setup where the unit is fed from an overhead hopper and sacks dropped to conveyor. Thus it is possible for one man to bag over 100 tons of bulk chemicals per day.

The equipment is simple to operate. There are just two controls: bag clamp handle; and feed valve handle. Each has a short travel to open and close positions. The operator makes just four short motions to attach a bag, fill it, weigh it and release to the conveyor. EXACT WEIGHT Scales are built for hard service. Adjustments are few and simple. For protection against rust, the bearings are agate set in metal, and pivots are alloy steel with hard chromed finish. Stainless steel and brass fittings used where practical. Frame and lever casting are primed with red oxide and baked on enamel.

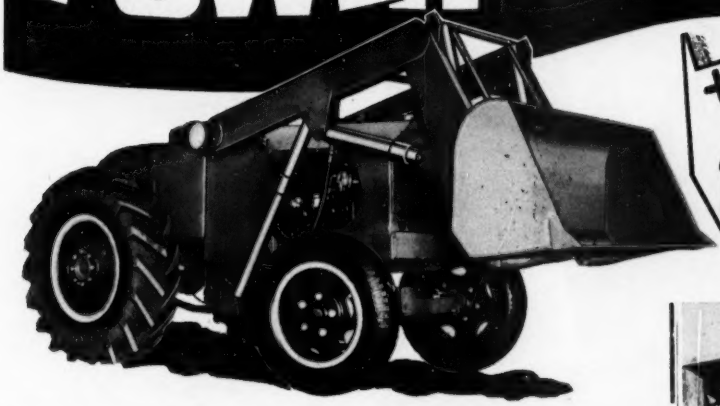
Evidence of their popularity?

These scales have been preferred equipment for over 25 years. In all types of service, their speed, economy, and dependability in the hands of unskilled labor have increased profits for the user. Write for full details today.

SALES and SERVICE
in all Principal Cities
from Coast to Coast
and Canada.

EXACT WEIGHT SCALES
Industrial Precision
THE EXACT WEIGHT SCALE COMPANY
906 W. Fifth Avenue • Columbus 8, Ohio
2920 Bloor St., W Toronto 18, Canada

Lessmann POWER SHOVEL



32 Years of "Know-How" means LESSMANN!

When You Have a Loading or Moving Job You Want A Machine Built To Handle It!

Now, after 32 years of shovel manufacturing LESSMANN has developed the one and only real **power** shovel, **not** reliant on traction. Why ram and bang a tractor unit to pieces when it isn't necessary! The LESSMANN HF10, perfected in 1949, has proven itself under the most rugged conditions.

It does everything that others just try to do. Read these exclusive Lessmann features and decide for yourself the Lessmann is the outfit for your exact needs—

1. The only real Power Shovel
2. Will dig 12" below wheel level
3. Digs in on level ground
4. Forty-two inch forward sweep
5. Carries its load close to tractor
6. Loads shovel at any height
7. Unloads shovel at 42" from tractor at 9'-4". (Higher dumping clearances available)
8. Double shovel control cylinders
9. Shovel locks in loading position
10. Full tilting backfiller blade
11. No ramming to load shovel
12. Loads shovel without traction
13. Sixty per cent greater loading power
14. Ford V8 Industrial Motor gives 50% surplus of power under traction conditions

Compare the Lessmann. It has power-to-go and power-to-do. It's complete. It's built to last. It is the machine for you.

SOME DISTRIBUTOR TERRITORY OPEN

Loading into hopper at 9'. Loading shovel on very soft ground could only be accomplished with load retraction or load balanced.

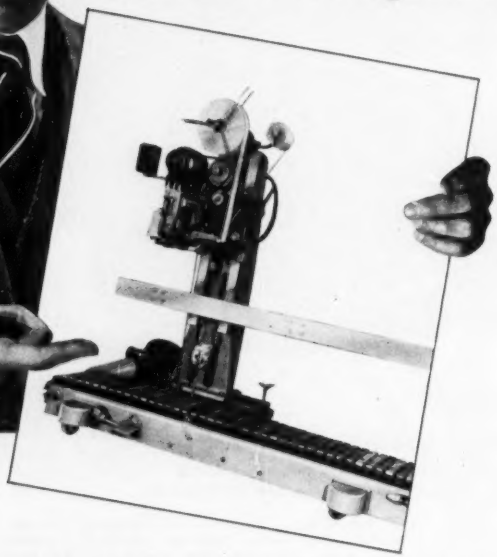
A good load handled easily and quickly. Loading from rock pile. Shovel was loaded without spinning wheels. Try that with any other type loader.

Loading coal while standing still. Retract the load for moving or hauling coal. Ideal for cleaning yards.

MFD. BY Lessmann MFG. CO. DES MOINES IOWA

"I believe in being honest and telling you

Exactly What I Think About This Bag Closer"



Model ET applies Tamaut "Cushion-Stitch" over dry tape for sift-proof closure. Model E-1 applies "Cushion-Stitch" only, for use where sift-proofing is not essential.

For full details, write today for booklet 280C

"I bought a Model ET Bagpaker® — the one that applies the 'Cushion Stitch' over a dry tape. It makes a neat, strong, sift-free closure. The machine is of welded steel construction throughout — well built — I don't think it will ever wear out. It takes care of up to 15 bags per minute, and only one man is needed to operate it.

"The thing I like best about the Model ET is that it hasn't given me a bit of trouble — no breakdowns or delays. It purrs right along minding its own business. I'm sold on it."

BAGPAK MULTIWALL BAGS

International Paper Company

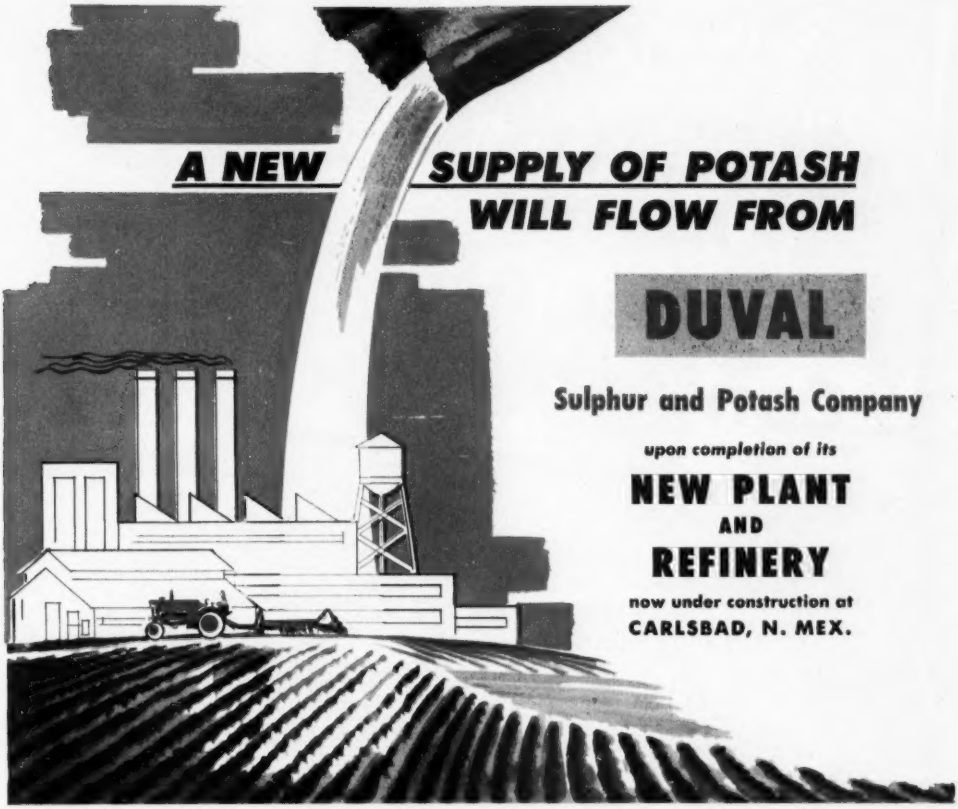
BAGPAK DIVISION

220 East 42nd St., New York 17

BAG PACKAGING MACHINE

BRANCH OFFICES: Atlanta • Baltimore • Baxter Springs, Kansas • Boston • Chicago • Cleveland • Denver • Los Angeles • New Orleans • Philadelphia • Pittsburgh • St. Louis • San Francisco

IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa, Toronto.



A NEW SUPPLY OF POTASH WILL FLOW FROM

DUVAL

Sulphur and Potash Company

upon completion of its

NEW PLANT AND REFINERY

now under construction at

CARLSBAD, N. MEX.

ANTICIPATED PRODUCTION DATE

LATE WINTER OR EARLY SPRING, 1952.

MORE DEFINITE INFORMATION WILL BE FURNISHED AS AVAILABLE

Address All Communications to

ASHCRAFT-WILKINSON CO.

Exclusive Distributors

HOME OFFICE

ATLANTA, GEORGIA

Cable Address ASHCRAFT

NORFOLK, VA. • CHARLESTON, S. C. • TAMPA, FLA. • GREENVILLE, MISS. • COLUMBUS, OHIO

DUVAL POTASH *FOR BETTER PRODUCTS OF FARM AND FACTORY*

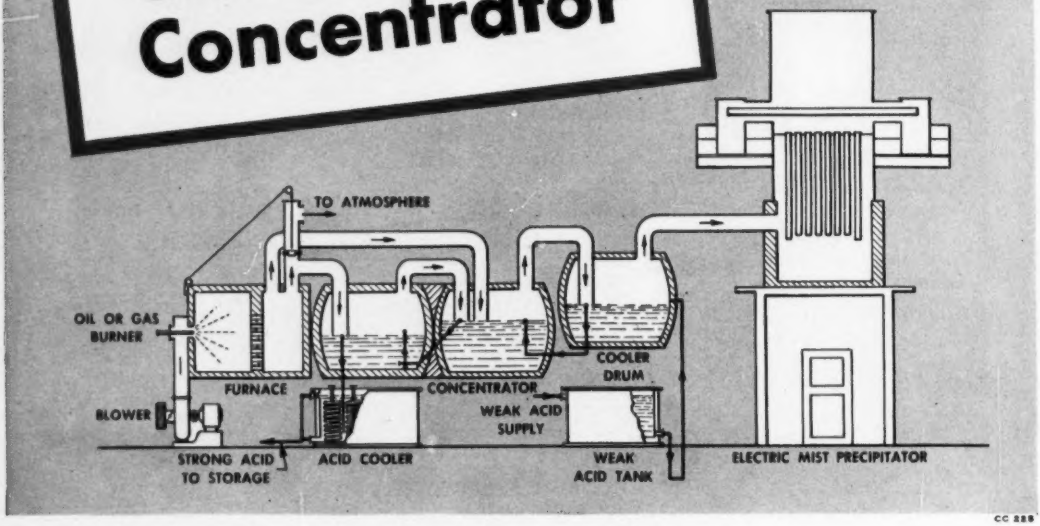
for highest efficiency

CHEMICO

DRUM-TYPE

Sulfuric Acid Concentrator

Hot air about 1100F is blown through a series of two acid baths where it quickly gives up most of its heat and emerges at a temperature a little above that of the acid itself. The high concentration is carried on in the front chamber. The hot gases leave the front chamber and enter the rear chamber into which the weak acid is fed. An additional cooler drum is used on high capacity units.



CC 228

For high strength sulfuric acid concentration, the Chemico Drum-Type Concentrator is *most efficient* where a reasonably large and continuous quantity of acid is to be concentrated and either oil or gas is available as fuel.

As the diagram and description of the process show, the major advantage of this Drum-Type System lies in its *complete utilization of direct heat.* This accounts for the high economy of this Chemico method of concentration. The process is continuous. Only *one* control man is needed per shift, even for multiple units.

Where sulfuric acid contains iron sulfate, Chemico offers the High-Temperature Concentrator. The Flash-Film Concentrator may be used efficiently where low cost steam is available for heat, or if acid quantities are small or intermittent. Whatever your sulfuric acid concentration problem, it pays to consult Chemico.

CHEMICAL CONSTRUCTION CORPORATION

A UNIT OF AMERICAN CYANAMID COMPANY

488 MADISON AVENUE, NEW YORK 22, N. Y.

CABLES: CHEMICONST, NEW YORK

EUROPEAN TECHNICAL REPRESENTATIVE

CYANAMID PRODUCTS, LTD., NORTH WEST WING, BUSH HOUSE, ALDWYCH, LONDON W.C. 2, ENGLAND

Chemico Plants Are Profitable Investments

Name ANY Fertilizer Spreading job . . .

there's a

Baughman

specialized body to do it better, easier and give you more profit . . . because

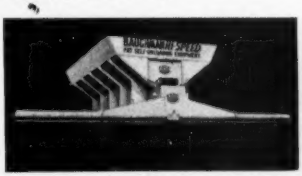
Baughman *builds the only COMPLETE LINE*

ASK–MS–4

- **ALLOY STEEL CONSTRUCTION GIVES MAXIMUM PAYLOAD.**
- **13 basic agricultural models, each built to do a better spreading job of materials for which designed.**
- **Lengths from 9 to 33 ft. (5 to 30 tons capacity) . . 1 to 6 compartments for selective unloading of different materials.**
- **Available with single or double spreading distributor.**
- **Four different gear reductions and drag chain flight spacing . . . this controls volume from a few hundred lbs. to 3 or more tons per acre.**
- **Complete selection of conveyor bottom widths.**
- **Controlled volume and spread pattern at any truck speed. Oil-sealed clutch and 3-speed transmission regulate rate of discharge from body . . . velocity of spinner remains in constant ratio to engine speed because of direct drive.**

ASK–3W–6

FERTILIZER SPRAYER holds the spread to the ground and makes it stick. Covers up to four acres to the mile at 15 miles per hour.



ROCK PHOSPHATE SPREADER ATTACHMENT gives uniform spreads on the level, slopes and hillsides. Designed to prevent materials from packing and crusting.

WRITE FOR FULL INFORMATION & OUR RECOMMENDATIONS.

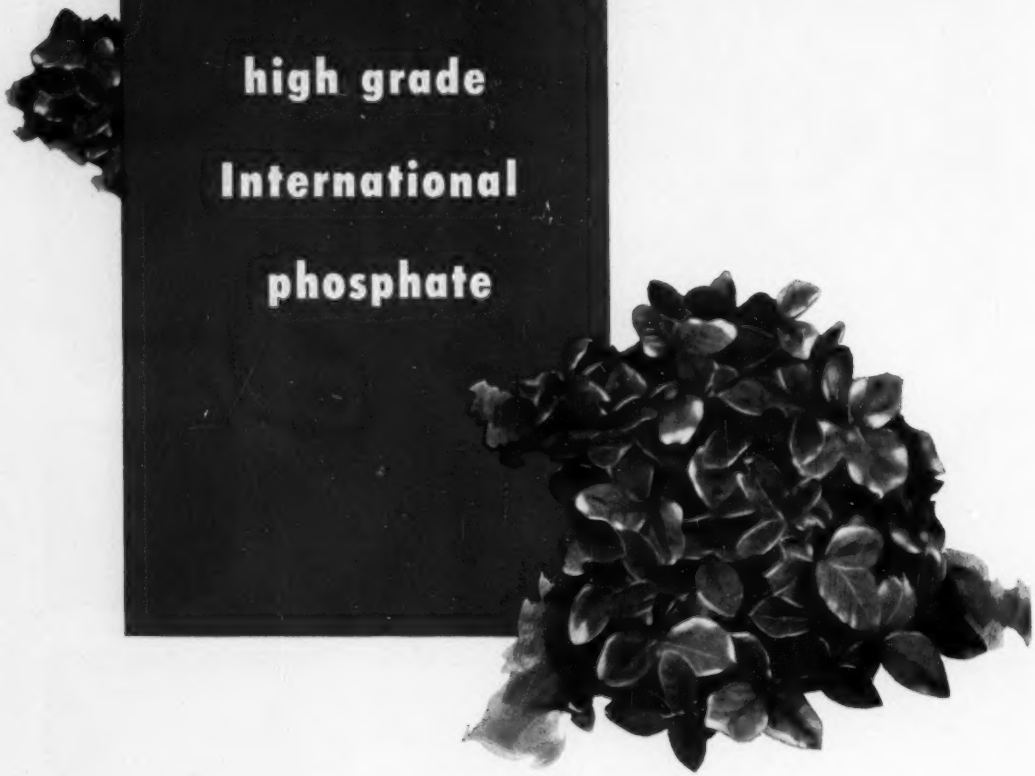
ASK–3–8

BAUGHMAN MANUFACTURING CO., Inc.

911 SHIPMAN ROAD — JERSEYVILLE, ILLINOIS

"The Pioneers of the Fertilizer Spreading Industry"

high grade International phosphate



International Minerals & Chemicals

PHOSPHATE DIVISION

Ample resources for prompt deliveries of large tonnages from *International's* modern mines and plants in Florida at Noralyn, Peace Valley, Achan, Mulberry; in Tennessee at Mt. Pleasant and Wales.

- **phosphate for the manufacture of complete plant foods**
- **natural ground rock phosphate for direct application to the soil**
- **phosphate for the manufacture of industrial chemicals**

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6

OPS Lifts Controls On Fertilizer Materials

General Overriding Order #3, Amendment #4, effective December 26, removes from all price control a number of fertilizer ingredients, including hoof and horn meal, peat moss, and animal manure.

NPA Limits Sulphur to 90%

NPA December 29 issued regulations in effect limiting sulphur use to 90% of that used in calendar 1950, except in certain defense industries which will be handled via special directives. The order applies on a company, rather than a plant, basis. The order makes no provision for new plants.

IAC Meeting Reports

The Industry Advisory Committees have been very busy this past month, and this is a summary of what they advised:

Nitrogen Advisory Committee recommends that an additional 220,000 tons of nitrogen capacity be developed, as needed in 1955. That NPA should give active support to projects to convert liquid ammonia to solid nitrogen fertilizers. That holders of certificates of necessity should be asked for definite word that they will soon begin construction. And that USDA should complete the state-by-state survey, now in progress, of 1955 nitrogen needs.

Superphosphate Advisory Committee went over the results of an OPS study of costs and prices in the industry, getting ready for the tailored regulation which has been awaited. The OPS figures would result in prices averaging several cents per unit of available phosphoric over the ceiling manufacturers have established under GCPR. The regulation, expected no sooner than February, will be too late for this season, but will be welcomed.

Mixed Fertilizers Advisory Committee on December 17 recommended that no tailored regulation be issued for this season because shipments have already begun.

It Seems to Me

by BRUCE MORAN

It is our annual custom to open our pages to the Industry Associations and to USDA. And they make use of the forum we offer. You saw the NFA report in November. You see the APFC report this month. And in March you will see USDA's report.

But it has impressed us of Commercial Fertilizer that no written or oral report any of these organizations could make would begin to do justice to the importance of their work. They can give highlights, but not the hundreds, perhaps thousands of small things, which bulk so large in the progress of the industry.

So it seems to me our readers should examine not only the facts stated in these annual compilations—but look back of them at the profound values which can only come of eager, intelligent, trained minds, bearing down collectively on the furtherance of the work the industry is doing for the farmer, with the agronomist, and with the agricultural forces of the States and the Federal Government.

INDUSTRY CALENDAR

Date	Organization	Hotel	City
Feb. 4-6	Sou. Ag. Workers	Biltmore	Atlanta
June 16-18	NFA	Greenbrier	White Sulphur
June 19-22	APFC	Homestead	Hot Springs
Nov. 10-12	CFA	Desert Inn	Palm Springs

We enjoyed your Christmas Greetings....

The staff of Commercial Fertilizer has been delighted at the many Christmas cards and other Holiday greetings which have come to us. We wish each of them could be acknowledged separately, but must use this means to thank you for your good wishes.

... and wish you a very Happy New Year

HIGHLIGHTS OF APFC 1951 PROGRAM

A review of the year 1951 finds the American Plant Food Council, like other industry trade associations, with an accelerated information program for its members as a result of an increased tempo in the national mobilization program.

Government regulations and mobilization orders — together with special services of individual character—have been provided to members of the Council. At the same time, there has been no reduction in the routine programs which constitute the backbone of trade association activities. In addition to furnishing information in connection with the mobilization effort, the Council has carried on the promotion of normal activities which benefit members and the industry as a whole.

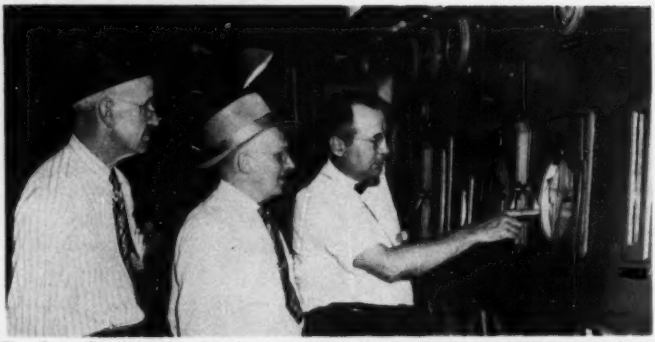
Many of the Council's educational programs have been expanded to emphasize fertilizer production achievements which have taken place despite complex Government regulations, shortages of construction materials, and not least, the scarcity of sulfur.

The sulfur shortage alone has placed an increased responsibility and opportunity upon trade associations to provide accurate and informative stories to the Nation and, especially, to farmers who look to the industry for the plant foods so essential in producing increased quantities of food and fibre.

THROUGH MANY CHANNELS

Many of the Council's educational programs have brought about a greater understanding of industry's problems, particularly as they relate to the demand for increasing quantities of fertilizer. To better tell the industry's story, the Council has used virtually all of the agricultural news-disseminating facilities now available.

Many national farm magazine editors have employed Council services in the preparation of fertilizer outlook stories and sound land-management articles paramounting the role of plant food in the defense mobilization picture.



The Council enjoys the closest cooperation with the American Agricultural Editors' Association, the members of which are kept up-to-date on the fertilizer situation through press releases, interviews and tours of fertilizer industry plant operations. Shown above (left to right) are: Dr. L. R. Neel, Editor, FARM & RANCH-SOUTHERN AGRICULTURIST, Nashville, Tenn., Ferdie Deering, Editor of THE FARMER-STOCKMAN, Oklahoma City and President of the American Agricultural Editors' Association and Louis H. Wilson, Director of Information for the American Plant Food Council and Editor of the PLANT FOOD JOURNAL.

Radio farm directors throughout the country have been furnished a new type of fertilizer industry information service consisting of recordings by nationally known agricultural leaders on subjects directly related to fertilizer consumption and usage. For example, one set of recordings for radio stations serving farmers consisted of talks by Secretary of Agriculture Charles F. Brannon on "Facing Next Year's Big Production Job"; Paul T. Truitt, President, American Plant Food Council, on "The Fertilizer Outlook for the Next Crop Year"; Dr. Robert M. Salter, Chief, USDA's Soil Conservation Service, on "Looking Ahead in Farm Research"; and Dr. William M. Myers, Director of Field Crop Research, Bureau of Plant Industry, Soils, and Agricultural Engineering, Beltsville, Maryland, on "Grassland Agriculture."

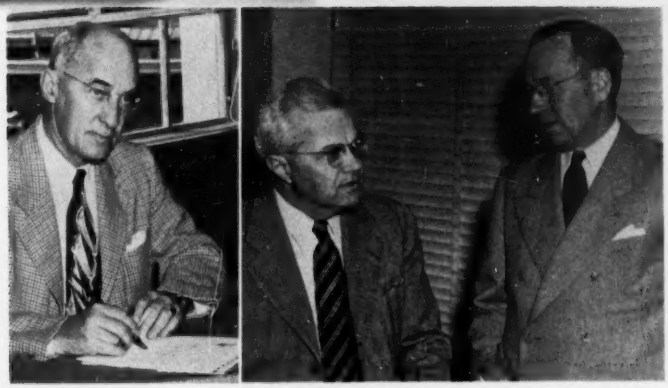
The radio recordings by authorities in the field of agriculture have been widely accepted and appreciated by radio farm directors. In addition, the Council has stepped up its services to radio farm directors in terms of special stories particularly adapted to radio programming.

TREMENDOUS AUDIENCE

Recognizing the importance of getting the industry's story to agricultural workers who serve farmers, emphasis has been placed on the availability of plant foods as seen by recognized Government officials. For example, a recent issue of the **Plant Food Journal**, the Council's quarterly magazine, contained stories on "Let's Look at Nitrogen", by W. A. Minor, Assistant to the Secretary of Agriculture and Chairman of the USDA's Fertilizer Committee, together with an article by W. R. Allstetter, Deputy Director of the Office of Materials and Facilities, Production and Marketing Administration, USDA, on "Fertilizer and the Sulfur Shortage".

In an effort to render a greater service to farmers, the Council's Board of Directors authorized an enlarged **Journal** mailing list to include all the Nation's county agents, vocational agriculture teachers, soil conservation workers, and many other groups directly engaged in

(Continued on page 22)



Nationally known leaders in the fertilizer industry have served as chairmen of the American Plant Food Council's Executive Committee. The present chairman is George E. Petitt, left, Vice President of the Potash Company of America, Washington, D. C. Herschel D. Newsom (center), Master of The National Grange, and Paul T. Truitt, President of the American Plant Food Council, jointly announce a nation-wide essay contest on the subject of "CONSERVATION FARMING FOR ABUNDANT LIVING," with $10,000 in prizes being offered for young men and women through 20 years of age. The contest begins January 1 and will end March 31, 1952. Nationally known leaders in the field of vocational agriculture, extension work, conservation, land-grant colleges, and others are supporting the program designed to enlist the enthusiasm of the Nation's youth in the cause of better land-management.

APFC HAS STRONG LEADERS

The Council's advancements and achievements in behalf of the industry during the past six years have been attributed largely to the calibre of leadership on the organization's Executive Committee and Board of Directors.

Chairmen of the Council's Executive Committee, in the order in which they served, include such outstanding industry leaders as:

Ralph B. Douglass, President, Smith-Douglass Company, Norfolk, Va.; C. B. Robertson, President Robertson Chemical Corporation, Norfolk, Va.; Fred J. Woods, President, The Gulf Fertilizer Company, Tampa, Fla.; J. A. Howell, President, Virginia-Carolina Chemical Corporation, Richmond, Va.; W. T. Wright, Vice President, F. S. Royster Guano Company, Norfolk, Va.; and George E. Petitt, Vice President, Potash Company of America, Washington, D. C., present Chairman.

Other members of the 1951-52 Executive Committee are:

C. Cecil Arledge, Vice President, Virginia-Carolina Chemical Corporation, Richmond Va.; John V. Collis, President, Federal Chemical Company, Louisville, Kentucky; C. B. Robertson, President, Robertson Chemical Corporation, Norfolk, Va.; John E. Sanford, President, Armour Fertilizer Works, Atlanta, Ga.; and W. T. Wright, Vice President, F. S. Royster Guano Company, Norfolk, Va. (ex officio).

BOARD OF DIRECTORS

Term expiring June 30, 1952; C. Cecil Arledge, Virginia-Carolina Chemical Corporation, Richmond, Virginia; Luis R. Gonzalez, Ochoa Fertilizer Corporation, Hato Rey, Puerto Rico; W. Hampton Logan, Logan-Robinson Fertilizer Company, Charleston, South Carolina; George E. Petitt, Potash Company of America, Washington, D. C.; Ashmead F. Pringle, Jr., A. F. Pringle & Company, Charleston, South Carolina; P. J. Prosser, The Baugh & Sons Company, Baltimore, Maryland; John E. Sanford, Armour Fertilizer Works, Atlanta, Georgia; Frank S. Washburn, American Cyanamid Company, New York, New York.

Term Expiring June 30, 1953: W. B. Badenoch, Richmond Guano Company, Richmond, Virginia; John V. Collis, Federal Chemical Company, Louisville, Kentucky; George Cushman, Long Island Produce & Fertilizer Company, Inc., Riverhead, New York; Howard Fisher, The Diamond Fertilizer Company, Sandusky, Ohio; George W. Gage, Anderson Fertilizer Company, Inc., Anderson, South Carolina; C. B. Robertson, Robertson Chemical Corporation, Norfolk, Virginia; Fred J. Woods, The Gulf Fertilizer Company, Tampa, Florida; M. S. Wright, Texas Farm Products Company, Nacogdoches, Texas.

Term Expiring June 30, 1954: C. B. Clay, Cotton States Fertilizer Company, Macon, Georgia; J. C. Crissey, G.L.F. Soil Building Service, Ithaca, New York; Wallace B. Hicks, Wilson & Toomer Fertilizer Company, Jacksonville, Florida; R. R. Hull, I. P. Thomas & Son Company, Camden, New Jersey; Kenneth D. Morrison, Naco Fertilizer Company, Charleston, South Carolina; John R. Riley, Jr., Spencer Chemical Company, Kansas City, Missouri; J. A. Roberts, Pioneer Phosphate Company, Des Moines, Iowa; M. W. Whipple, Olds & Whipple, Inc., Hartford, Connecticut.

APFC POLICIES

All of the Council's activities are woven around six "guideposts" representing Council policies, aims and purposes. They are as follows:

1) Support and encourage the agricultural research, educational and control agencies.

2) Inform its membership, farmers and others concerning the plant food needs as viewed by recognized agricultural research agencies.

3) Promote the operation of the fertilizer industry under the present system of private enterprise in continuing to solve the plant food problems of agriculture in cooperation with established research and educational institutions.

4) Cooperate with farmers and their organizations in developing policies designed to place agriculture on a self-supporting basis.

5) Foster the lawful interests of the plant food industry.

6) Encourage the conservation of our basic food resources.

Paul T. Truitt, President of the Council, in viewing the Council's aims and purposes, emphasized that the fertilizer industry "will find pride of authorship in (the Council) is over-shadowed by the desire to serve efficiently."

APFC

(Continued from page 20)

promoting a sound agricultural program.

Other media contributing to a better informed agricultural leadership have been employed to tell the story of the fertilizer industry in relationship to other important contributions in a sound farming program. For example, the Council's Motion Picture Committee now is reviewing scripts for a new 16mm. film which will be designed for classroom as well as general agricultural use. One of the early decisions when the Council was formed, pointed up the need for more and better visual aids in the fields of agricultural education. As a result, the Council produced "First in the Hearts of Farmers", a 16mm., sound, black and white, motion picture woven around some of the agricultural experiences of George Washington and the emphasis he placed on plant foods in a sound farming program. Since the film was issued in 1948, the demand for showings has been almost continuous, and today nearly two million people, predominantly farmers, have seen and applauded the picture. The search for new and better ways to emphasize the importance of fertilizers is a continuous process in the operations of the Council's Motion Picture Committee.

CONSERVATION ESSAY

One of the most outstanding educational projects sponsored by the Council in cooperation with the National Grange is a nation-wide essay contest on "Conservation Farming for Abundant Living".

Young men and women who will not be more than 20 years of age on March 31, 1952, are eligible to compete in the contest for which $10,000 in prizes has been appropriated.

In announcing the contest, the Council and Grange, in a joint statement, said:

"As organizations vitally interested in maintaining, replenishing and increasing the fertility of our land, The National Grange and the American Plant Food Council cordially invite you to enter our essay contest on 'Conservation Farming for Abundant Living.'

"The conservation and wise use of our soils are essential to abundant living and the economic well-being of our Nation.

"The youth of our Nation will furnish the leadership so essential to a productive and profitable agriculture. Our objectives are to stimulate new, intensive thought and aggressive action (1) looking toward a continuation and improvement of means and methods emphasizing maximum economical production while (2) at the same time stressing the conservation of our natural resources. In meeting our objectives, we believe our contestants will find the keys to more abundant living."

Secretary of Agriculture Charles F. Brannan heads a nationally known Board of Judges, representing some of the key agricultural and educational service agencies of the country. Other members of the Board are: Dr. Hugh H. Bennett, Chief, Soil Conservation Service, USDA; Miss Lois M. Clark, Assistant Director, Division of Rural Service, National Education Association; Dr. R. Frank Poole, President, Association of Land-Grant Colleges and Universities; Dr. W. T. Spanton, Chief, Agricultural Education Service, U. S. Office of Education; Miss Jennie Williams, President, National Home Demonstration Council; and Dr. M. L. Wilson, Director of Extension Work, USDA.

The 1952 contest was approved by the Council's Board of Directors in line with a policy of long standing in support of sound agricultural educational and research projects. While previous essay contests conducted in cooperation with the Grange have been termed "outstanding successes," the goal for youth participation for the present project calls for five times the average number of entries in past years.

PUBLICATION PROGRAM

In further translating the Council's aims and purposes in terms of worthwhile educational and research projects, 850,000 copies of **"Our Land And Its Care"** have been furnished to agricultural workers and have been distributed by leading fertilizer manufacturers.

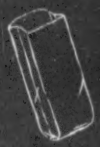
"Our Land And Its Care" is a 64-page story of our soil and how to keep it productive. The importance of fertilizer is woven throughout the story, but not to the exclusion of other practices entering into a sound land-management program.

The usefulness and popularity of the publication has been such that plans already have been made to revise and reprint it, within the next

(Continued on page 31)

Dr. John R. Taylor, Jr., agronomist of the American Plant Food Council, (left) hands copy No. 850,000 of "Our Land and Its Care" to Walter Cummins of Freedom, Okla., National president of the Future Farmers of America. A simplified story of the complicated problems of our soil and how to keep it productive, the 64-page publication was prepared by the Council in collaboration with the Agricultural Education Service, U. S. Office of Education. Copies have been distributed to county agents, vocational teachers and others engaged in promoting sound land management practices. Single copies will be sent free upon request to the American Plant Food Council, 910 17th Street, N. W., Washington 6, D. C., and larger quantities are available to recognized agricultural groups.

The least expensive and most satisfactory package for many chemical products is a paper bag



If you manufacture dry chemicals sold in units up to 25 lbs., you probably can package effectively in paper bags—at substantial savings.

Union's versatile CHEM-PAK bags can provide the kinds of protection your products need. They are sift-proof. They are being made to lock out moisture, odor, grease, vapor, corrosion. They resist rough handling. They also can retard flavor loss and product deterioration.

You pay less for CHEM-PAK than for other comparable packages. You save on filling, sealing and handling costs. You reduce freight charges. You cut losses from package damage or breakage.

Measure your present container against CHEM-PAK. Send for new *Package Evaluator* or ask to see a Union representative.

Union's modernized plant at Hudson Falls, N. Y. Billion-bag specialty packaging headquarters.

CHEM-PAK BAGS FOR FERTILIZERS—INSECTICIDES, FUNGICIDES, DUSTING POWDERS—PLANT FOODS—WALL SIZE—PASTE FLOUR—PATCHING PLASTER—PREPARED CEMENT—PLASTER OF PARIS—PHARMACEUTICAL CHEMICALS—DYES AND PIGMENTS—SANITARY CHEMICALS—POWDER SHAMPOOS—CHLORINE COMPOUNDS AND ALKALIDES—CAULKING, SEALING, WHITING AND FILLING COMPOUNDS—AND OTHER DRY CHEMICALS WITH COMPARABLE PACKAGING REQUIREMENTS

CHEM-PAK

SIFT-PROOF PAPER BAGS FOR CHEMICAL PRODUCTS

UNION BAG & PAPER CORPORATION

New York: Woolworth Building
Chicago: Daily News Building

NEW! Mail this coupon for practical CHEMICAL PACKAGE EVALUATOR. No charge or obligation.

Union Bag & Paper Corporation
Woolworth Building, New York 7

Please send me the new Chemical Package Evaluator.

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

Around the Map

ARKANSAS

Huckaby Gin Co., Lake City, was was hit by fire again for the second time in three months. The fire in the Fall was a $60,000 loss, was rebuilt. The most recent fire included a $5,000 warehouse, $7,000 of fertilizer and $2,900 of other loss. **Eric Rogers** of Jonesboro heads the gin corporation.

* * *

Hammond Bag & Paper Company recently dedicated a new plant at Pine Bluff with a two day celebration. Hammond has had a plant at Pine Bluff since 1947 and built the new $350,000 multi-wall bag plant to replace the former installation, now in use by the Army Chemical Corps. It is completely modern, fireproof, with 67,500 feet of floor space; designed to permit doubling its size in the future. The celebration included entertainment for residents of the area, customers, suppliers and even competitors, with luncheons and planned tours. President **M. J. Davis** was featured speaker at the luncheons.

CALIFORNIA

Bandini Fertilizer Company, Los Angeles, are using these match books to promote their plant foods and insecticides. Some are in "sleeve" containers of 6 books each, for salesmen's use as give-aways. Some are put up in cartons of 50 for dealers to give away one book at a time. **Forrest L. Dolan** of the **Mayers Company,** Bandini's advertising agency, says they are doing a good job.

FLORIDA

F.E.C. Fertilizer Co., Homestead, has increased production 70% by the installation of weigh-batching machinery especially designed by **Davidson-Kennedy Co.,** Atlanta. The equipment (see photograph) consists of 12 overhead steel bins, clustered together in the form of a hopper, each containing five tons of a different ingredient. These, upon pushing a button, flow down to be weighed mechanically into the proper proportions for any analysis. General Manager **Henry Pridgen,** Assistant **John Frederick** and Plant Superintendent **Anton Waldin, Jr.** who worked on preliminary plans for the installation, report that it has cut to a minimum the opportunities for error, and has mechanized 100% their mixing, batching and unloading operations. Batches go by conveyor belt to the mixer, thence to the bag which in turn goes by conveyor belt—via the stitcher and tagger—to the waiting truck. An endless chain of buckets carries the material to a 48-foot tower, whence it is distributed to the hoppers.

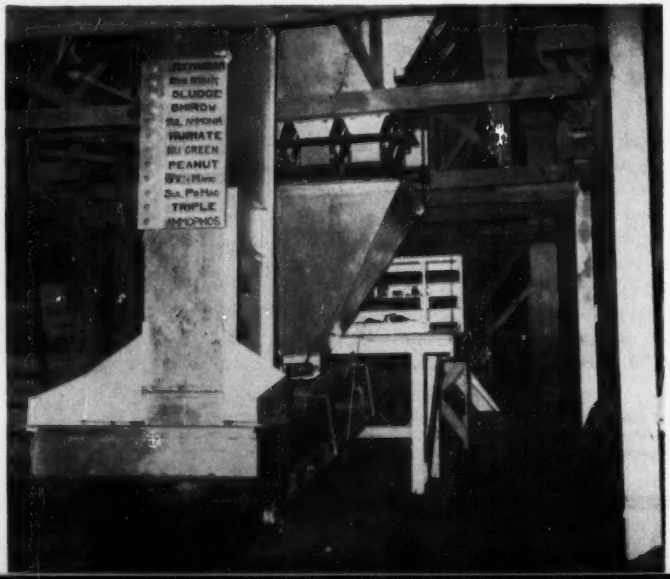
* * *

Stuckey Fertilizer Works, Pahokee, hae been acquired by **Blake L. Dunson** and associates. Mr. Dunson is president and general manager. Other officers: **Howard C. Fisher,** vice-president; **Howard K. Morgan,** secretary-treasurer. All concerned are experienced fertilizer people. They will continue production of fertilizers and insecticides, and plan plant expansion.

* * *

Hudson Pulp & Paper, Palatka plant has completed a $10,000,000 unit which doubles capacity and permits broad flexibility of output.

Here's a shot of the light panel which shows what is coming down from the cluster hoppers installed by Davidson-Kennedy Co. in the F.E.C. Fertilizer Company plant at Homestead, Florida. (See Florida)



STEDMAN

FERTILIZER PLANT EQUIPMENT

Dependable for More Than Fifty Years

All Steel Self-Contained Fertilizer Mixing and Bagging Units

Batch Mixers — Dry Batching **Pan Mixers — Wet Mixing**

Tailings Pulverizers — Swing Hammer and Cage Type

Vibrating Screens **Dust Weigh Hoppers** **Acid Weigh Scales**

STEDMAN FOUNDRY & MACHINE COMPANY, INC.

Subsidiary of United Engineering and Foundry Company

General Office & Works: AURORA, INDIANA

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Fertilizer *Oil Seed*

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Home Office: ATLANTA, GA.
Cable Address
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Offices: NORFOLK, VA., CHARLESTON, S. C.
TAMPA, FLA., GREENVILLE, MISS., COLUMBUS, OHIO

Exclusive Distributors: DUVAL SULPHUR & POTASH COMPANY
AMMONIATES — FEED STUFFS — SULPHUR
INDUSTRIAL AND AGRICULTURAL
CHEMICALS

This brings Hudson's Palatka investment to more than $22,000,000. Multiwall bags and other paper products are produced. The plant can make kraft paper in every weight from 20 to 90 pounds.

* * *

American Kenaf Corp., Miami is planting 1,500 acres of kenaf under government contracts, to provide seed for major plantings of the jute substitute in case war cuts off America's oriental burlap supply. 3500 acres will be planted for harvest, as well.

ILLINOIS

General Chemical is in the midst of a $1,600,000 expansion program at Fairmont City, the chief objective of which is to recover sulfuric from the acid sludge of the near-by Shell refinery.

* * *

International Minerals & Chemical Chicago, has acquired all the outstanding capital stock of **Eastern Clay Products**, and has created a new industrial minerals division into which that company will be absorbed, according to **Louis Ware**, International's president. Eastern produces swelling bentonites, for various industrial applications, and other bentonites and clays. **Norman J. Dunbeck**, Eastern's operating vice-president, has been made an International vice-president and put in charge of the new division.

KANSAS

Wichita Fertilizer, Inc., Wichita, has completed its 150 by 240 foot plant, and has begun production, which is expected to reach 400 cars per year.

LOUISIANA

American Cyanamid has bid on a large tract near Avondale as a site for the $47,750,000 nitrogen plant for which they have been granted a certificate of necessity.

MARYLAND

Miller Chemical & Fertilizer Corp. has changed its address to 2226 North Howard Street, Baltimore 18.

MICHIGAN

Pennsalt will increase anhydrous ammonia capacity of its Wyandotte Works by approximately 110% at an estimated cost of $2,200,000. Construction to begin early this year is scheduled for early 1953 completion. The new unit will employ the Casale, high-pressure system. Engineer-constructors are **Foster Wheeler Corp.**

* * *

Davison Chemical has acquired the Lansing plant of the **Michigan Fertilizer Co.**, of Sandusky Ohio, according to **W. N. Watmough, Jr.** v-p in charge of Davison's mixed fertilizer division, The unit is now known as Davison's Lansing Plant, with **Bernard C. Manker** as manager. Michigan Fertilizer will continue its pesticide business.

* * *

American Agricultural Chemical should, as you read this, be in production with their new Saginaw County plant, with **Robert E. Lehmkuhl** as superintendent. The plant is expected to produce 50,000 annual tons. American has 26 branches; makes insecticides as well as fertilizers. Automatic equipment will cut personnel to 40. The main plant is 310 by 200 feet.

MISSISSIPPI

Spencer Chemical is getting firmly under way with their $14,500,000 plant south of Vicksburg. **Quaker Valley Constructors**, Pittsburg, Kansas, have awarded the first sub-contract, for clearing and grading, to **Maloney Construction Company**, Jackson. The plant will produce 200 daily tons of anhydrous ammonia, and will have an annual payroll of $400,000 when completed two years from now.

NEW MEXICO

Duval Sulphur and Potash have asked authorization of the SEC to borrow $1,500,000, a million of which is to complete mining and milling facilities for potash in Eddy County. $2,500,000 has already been borrowed as the New Mexico operation is expected to cost a total of $8,206,000. The additional $500,000 is a stand-by commitment for replinishment of capital if required. The loan is by the **First National Bank** of Boston.

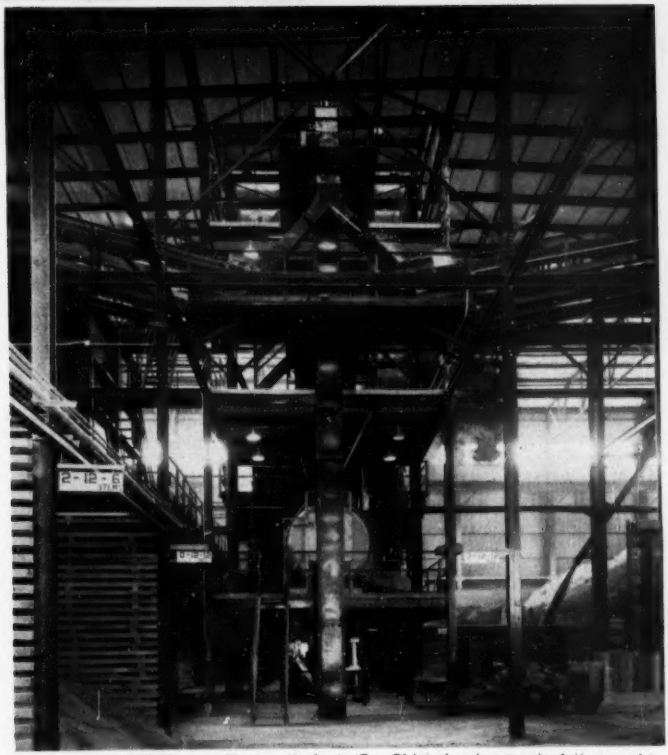
NEW YORK

Long Island Compost Corporation, Bay Shore, has been incorporated with these directors: **Kendrick C. Smith, Geraldine Doremus** and **Eugenia Antoni.**

OHIO

Virginia-Carolina's Cincinnati plant, reported here last month as rebuilt after the fire of May 1950 is a million dollar installation, some 25% larger than the plant destroyed, and costing more than three times the price of the burned plant, then estimated as a $300,000 loss. The new plant is all-steel construction, fire-proof and odorless because no organic matter is used. The plant, which serves Ohio, Kentucky and Indiana also manufactures sulphuric acid. **A. J. Darfus** is sales manager; **J. C. Edge** is plant superintendent; **C. S. Griffith** is traveling superindent; **C. H. Godfrey** is assistant sales manager. The new plant (see picture) is 400 by 300 feet and rises 50 feet high to provide clearance for

Officers, directors and architects were on hand when ground was broken for the Activated Fertilizer corporation's $100,000 plant Spokane, Washington. Left to right, watching the first shovelful of earth turned, are Edgar Stockdale, director; Bert Woolridge, secretary-treasurer; William T. Smith, salesman; Floyd Vaughn, director; S. E. Salter, president; Stuart Compton, director; F. W. Richardson, salesman; A. C. Kjack, stockholder; Clifford Berg, sales manager, and William W. Wilson of McClure, Adkison & Wilson, architects who designed the plant. Unable to be present for the picture was Dwight Gustafson, chemist and director of the company.



Interior view of V-C's new Cincinnati plant, (See Ohio) showing manipulating machine and distribution to overhead belt conveyors.

cranes and other equipment that supplies a completely mechanized plant.

OKLAHOMA

Sunset Fertilizer Company, Bartlesville, are now in full production with their new 20,000 annual ton superphosphate and mixing plant, President **Chester C. Crawford** reports. Truck and rail shipments are rolling to dealers in Oklahoma, Kansas, Missouri and Arkansas. Mr. Crawford tells us that fertilizer use has increased twenty-fold in his area during the past ten years and the new plant is an effort to meet the heavy demand. Mr. Crawford is well known in the industry, having been vice-president and sales manager of **Phillips Chemical** before organizing Sunset. The plant is located on Frank Phillips Boulevard, and cost $150,000.

TENNESSEE

Shea Chemical, an affiliate of **Hoosac Valley Limestone Company** of Adams, Massachussetts, will build at Columbia a three million dollar phosphate plant.

WASHINGTON

Activated Fertilizer Corporation, Spokane, have broken ground (see picture) for their new $100,000 plant which will produce 120,000 annual tons and is to be in operation by July. The new concern is headed by **S. E. Salter** and has been largely financed by wheat growers of the area. Phosphate rock will be from Montana, Wyoming and southern Idaho sources.

The plant is 52 x 68 feet, reinforced concrete tile-up walls; with the adjoining office building, total floor space will be 4,225 square feet. A 45 foot steel tower will be used for rock storage—this was already on the site, having been built for cement storage by a sand and gravel concern, but never used by them.

The plant is equipped to make triple superphosphate and mixed fertilizer. The County had to be convinced that the lime solution scrubbing process adopted would prevent fumes or noxious gases before a building permit was issued.

Clifford Berg is sales manager.

WEST VIRGINIA

Mathieson Chemical's lease of the Morgantown Ordnance Works has been approved by the House armed services committee. It is estimated it would require $150,000,000 to replace the plant, which can produce 144,000 tons or ammonia and 60,000 tons of methanol after rehabilitation, which is estimated to cost nearly five million dollars. The lease negotiations have been under way since early last year.

WISCONSIN

Three Lakes Peat Products Co., Three Lakes, has been formed by **Vernon Goldsworthy, Fred Sadowske** and **Clyde M. Paust.** The firm owns extensive peat deposits including part of the vast Thunder Lake marsh where peat is estimated to run as deep as 15 feet. They expect to sell the output largely for mulch, but some for blending with animal fertilizers.

AFRICA

Sulphur has been found on top of Africa's highest mountain, the dormant volcano, Kilimanjaro, by Tanganyika's geological survey department. The party reports the sulphur is practically pure; there are several thousands of tons and it looks as though it has been formed during the past 20 years. To exploit the deposits will be difficult as it must be brought down narrow pony tracks.

* * *

"Save Our Soils" is the title of a pamphlet published by the Bunumbu Press, Bo, Sierra Leone which might well make a model for distribution in many an American region. Simplicity is the essence of this interesting document, as may be seen from the opening chapter, which is headed "Our Soil—Sierra Leone's only source of wealth" and which opens: "The climate in Sierra Leone is hot and wet. There are

distinct wet and dry seasons. In our climate plants grow and, when they are dead, decay faster than in a more temperate climate." And later "When a man overworks he dies. When a farmer overworks his bush it dies and only grass will grow" . . . ("Bush" is, of course, the African word for field.) Under a heading "The work of ten thousand years gone in a child's lifetime" the pamphlet tells what erosion does to land . . . estimating 800,000 tons of soil eroded annually from the land of Sierra Leone . . . because "the bush is brushed."

AUSTRALIA

The Nauru Phosphate Works, almost completely destroyed by the Japanese during the war, have been restored, and are already producing a million tons of phosphate a year.

CANADA

American Institute of Mining and Metallurgial Engineers has appraised the "world's largest deposit of potash" near Unity, Saskatchewan, as 11 feet thick and nearly fifteen miles each way. American and Canadian geologists are conducting tests to determine how to bring the material to the surface from a depth of 3,500 feet by the brine recovery method, or by manual mining.

INDIA

Land reforms, the widest in history, are taking place all over India. The zamindari system—estates held by intermediaries extending over 14 million acres, were taken over by the government for redistribution. Landlords are allowed to retain only 22¾ acres for personal cultivation. So far 77,000 acres have been transferred to 70,000 tillers whose dependents number more than 250,000. Adequate compensation is paid the former landlords and that is estimated to reach $805,350,000 in ten major states, paid in 2½% bonds. The new working tenants pay for the land at rates based on income.

OBITUARIES

Dr. Ulysses P. Hedrick, 81, since 1937 director-emeritus of the New York AES, died November 15 in Geneva, New York. He joined the station in 1905.

J. Webb Howell, 76, an important factor in the Bryan Oil Mill and Fertilizer Company, Bryan, Texas, died there October 8.

Richard C. Maxwell, 72, for many years agent in Sanford, Florida for Wilson-Toomer Fertilizer Company, died in his sleep at home in Sanford November 23.

Frank P. Morison, 81, senior partner of Morison Brothers, Bangor, Maine, now a part of Summers Fertilizer, died in his home city.

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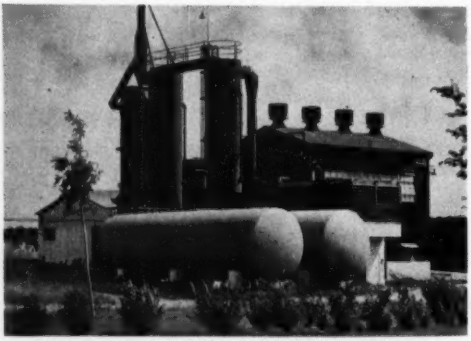

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We engineer, build and modernize sulphuric acid and fertilizer plants of all types and sizes. Before you build, expand or modernize your equipment, in any of the fields listed here—write for complete details concerning our services and recommendations. We supply the right answers quickly! No obligations . . .

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LOCAL GROUP MEETINGS ABOUND IN USA

Not so long ago we mentioned with enthusiasm the growing tendency toward small group meetings for the furtherance of knowledge, and the exchange of information between agronomists and fertilizer sales and production people. We were promptly deluged with announcements about many more than we suspected were happening, and have saved these because they represent an amazing total of manpower earnestly striving to learn.

Let's just take those we know about, from November through February: At **Biloxi, Mississippi** November 1-2 a meeting was addressed by Maurice Lockwood, International Minerals, representatives of USDA, the commissioner of agriculture, the dean of the agriculture service, and representatives of the AES.

At **Fayetteville, Arkansas,** November 7, representatives of fifty fertilizer concerns heard Dr. M. H. McVickar of NFA, and top agronomists from the College of Agriculture and the extension service.

* * *

At **Pine Bluff, Arkansas** November 26, a one day school for fertilizer salesmen was sponsored by the AES, and the speakers discussed fertility levels of soils, good soil management, and fertilizer recommendations for the area.

* * *

At **Hot Springs, Arkansas,** November 29 the AES sponsored another such meeting, with representatives of fertilizer concerns from 10 surrounding counties.

* * *

At **Blacksburg, Virginia,** December 3-8 a full week of fertilizer school was held over the air, with VPI authorities speaking daily.

* * *

At **Orono, Maine,** December 3-7 there was a fertilizer dealer school.

* * *

At **Manhattan, Kansas,** December 6-7, the Kansas State College agronomy department presented the results of its 1951 studies to a group of fertilizer company representatives, winding up with a banquet at which Dr. Emil Truog spoke.

* * *

At **State College, Mississippi,** December 5-6 the College presented a 2-day fertilizer short course. NFA's Russell Coleman spoke.

* * *

At **Columbus, Ohio,** December 7, Ohio State staged their annual fertilizer and lime conference.

* * *

At **Fargo, North Dakota,** December 7, there was a fertilizer dealers short course.

* * *

In **Arkansas,** December 11-19,

Don't Forget To Buy **MENTE BAGS**

Many fertilizer manufacturers all over the country are switching to **cotton** bags. Why?

- *Because* cotton bags today are a **good buy**
- *Because* cotton bags have resale value, thus practically eliminating container costs
- *Because* cotton bags are easy and quick to handle and stack
- *Because* cotton bags do not crack or puncture easily, and can be stored safely in any temperature

Dept. B1

Write, wire, phone us today for quotations on Cotton—Burlap—New—Used Bags

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Savannah

ISAAC T. RHEA, Pres.
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Box 204
Houston

there was a series of one-day fertilizer schools for dealers, covering Monticello, Brinkley, Hope, Hot Springs, Batesville, Jonesboro, Marion, Harrison, Morrilton, and Fort Smith. Advice was localized to each point covered, with crop specialists speaking at the appropriate points.

• • •

At **Lexington, Kentucky,** December 14, the fertilizer manufacturers of the region met.

• • •

At **Brookings, South Dakota,** December 14, there was a fertilizer dealers short course, featuring talks by dealers and members of the State College Faculty.

• • •

At **Ames, Iowa,** January 18, there will be a manufacturers conference instead of the annual dealer school. This was run at five points, November 30 to December 6: Ottumwa, Ames, Red Oak, Storm Lake and Waterloo.

• • •

At **Athens, Georgia,** January 21, the first official meeting of the Georgia Plant Food Educational Society; Conner Hall, College of Agriculture, University of Georgia. Charter will be accepted, and by-laws adopted. The program includes W. D. Barton, Tennessee Corp. on Functions of Dealers in Supplying Plant Food; Ray King, Georgia Fertilizer Co., on the outlook for 1952; Dr. W. M. Myers, USDA on Plant Food in Defense Expansion. A banquet will be held jointly with the American Society of Agronomy at which Dr. Myers will talk on Grassland Agriculture.

Cooper Morcock, Barrett Division, will preside at the business meeting, as acting chairman.

Beginning the next day the American Society of Agronomy and the Soil Science Society of America will meet at the same place, with an elaborate program.

• • •

At **Clemson, South Carolina,** the College will conduct their first insecticide-fungicide school, January 28-30. Monday will be devoted to the subject and the program carries over to Tuesday. Tuesday morning and afternoon airplane operators are scheduled to meet. And Tuesday afternoon pest control operators are having a session, which carries over into Wednesday.

Accommodations at Clemson House are adequate, but M. D. Farrar, Head, Department of Entomology & Zoology, who announces the meeting, suggests early reservations. Write the hotel direct.

• • •

At **Amherst, Massachusetts,** February 18-19 there will be a fertilizer dealer school.

For "high-nitrogen" fertilizer...
use *Koppers Ammonium Sulphate!*

● Koppers offers a good commercial grade of ammonium sulphate—the ingredient that is so essential to fertilizer because of its high nitrogen content.

KOPPERS COMPANY, INC.
Tar Products Division
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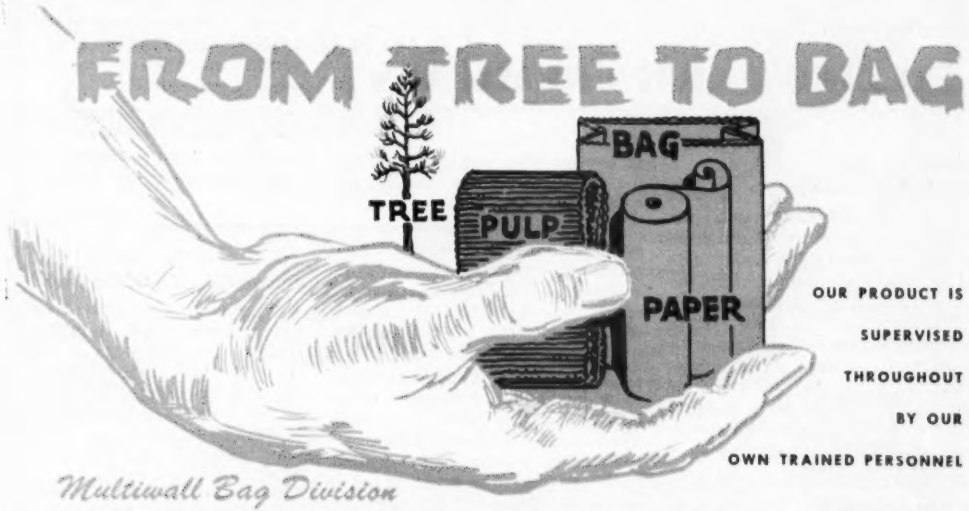
KOPPERS

CHARACTERISTICS

Koppers Ammonium Sulphate comes in crystals with low free-acid and moisture content. The nitrogen content is guaranteed to be not less than 20.5%.

SHIPMENT

From St. Paul, Minn. and Kearny, N. J., Koppers Ammonium Sulphate is shipped in 100 lb. and 200 lb. bags—also in boxcars and trucks. From Granite City, Ill. and Midland, Pa., it is shipped only in boxcars and trucks.



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APFC

(Continued on page 22)

school year, which will bring the tital circulation eventually to a million copies.

Like many other Council educational projects, **"Our Land And Its Care"** was prepared in collaboration with recognized leaders in the field or education. The collaborator in producing **"Our Land And Its Care"** was the Agricultural Education Service of the U. S. Office of Education. The distribution of the publication, today, largely is, and has been, among county agents, vocational agriculture teachers, soil scientists, and farm organizations, in addition to the farmers themselves.

COOPERATION WITH AGRONOMISTS

Only a few educational and research projects are cited in the Council's broad program dealing with fertilizers and their relationship to the agricultural economy. Annually, research fellowships have been established by the Council on selected projects to add further to the scientific knowledge on the broad subject of plan foods and their increasing importance to the national welfare. Also, many educational projects are conducted each year in cooperation with the agricultural colleges and federal agencies.

The Council has played an important role in strengthening the national defense. In fact, the Council recognizes a greater challenge today in terms of service than ever before in history. Only recently, the Secretary of Agriculture said:

"The world-shaking events of the past year have speeded American Agriculture across the threshold of a new era—an era which might be called the fertilizer era. For the present national emergency has pushed agriculture into a new phase of development in which the fertilizer industry will play its greatest role in history."

In addition to furnishing the routine informational services, such as news letters, Government reports, magazine material, and radio service, the Council serves somewhat as a clearing house for a large number of requests from Members of Congress, Government, land-grant colleges, and educational workers in general, who want more and more information on plant foods and the plant food industry.

Staff members work closely with the major farm organizations, land-grant colleges and other associations directly or indirectly serving farmers. They translate useful information developed by official agencies into worthwhile reports to the membership and others.

CFA Convention Dated November 10-12

The California Fertilizer Association will hold its 1952 convention at Desert Inn, Palm Springs, November 10-12.

In the Field of
ALLIED FARM CHEMICALS

Insecticide Act Ruled Constitutional

In the first reported case, the constitutionality of the Federal Insecticide, Fungicide and Rodenticide Act of 1947 was ruled valid by the U.S. District Court for the Southern District of New York. The defendants had delivered a disinfectant interstate without registering it with the Secretary of Agriculture, and had made the plea that the law was not constitutional.

NAC April Convention To San Francisco

Lea S. Hitchner has returned from California where he went to make arrangements for the regular Spring meeting of the National Agricultural Chemicals Association, of which he is executive secretary. The convention will be held the second week in April, in San Francisco. Hotel name and dates will be released later. NAC president Arthur W. Mohr, president of California Spray Chemical Corp., joined him in the final negotiations.

Is This How Chemotherapy Checks Plant Diseases?

Dr. W. Graham Keyworth, who has been visiting plant pathologist at The Connecticut Agricultural Experiment Station during the past year, has discovered strong indications that chemotherapeutants change the metabolism of plants in some way so that they become more resistant to disease.

Noting that several of the chemotherapeutants successful in controlling Fusarium wilt of tomatoes also produced injury to the plant roots, he reasoned that perhaps this root injury had something to do with the resistance of the tomatoes to the disease. To test his theory, he set about injuring the roots of plants in several ways and then inoculating them with the fungus that causes Fusarium wilt.

It was shown that root injury as such was not increasing resistance; rather it was some chain of reactions which the injury caused and which took some time to complete which made the plants less susceptible to Fusarium wilt.

The last step was chemical analysis which showed that plants inoculated some time after their roots were injured showed pronounced changes in soluble sugar content. Such changes in amount of sugar are symptomatic of changed metabolism. Compounds which act as chemotherapeutants are now being reexamined to see whether they affect a plant's resistance by altering its metabolism. Some of them have already been found which act in this way.

New Farm Chemicals Association Formed In Colorado

C. A. Dewey, superintendent of the C. D. Smith Company's agricultural division in Grand Junction, Colorado, has been elected president of the newly organized Colorado Agriculture Chemicals association.

Other officers are B. Thomas Snipes, Denver, vice-president; P. A. Ray, Denver, Secretary-treasurer; Frank Jasper and W. F. McCauley, both of Denver, members of the board of directors.

Mr. Dewey, in a recent interview said, "The objects for which this association was formed are to procure and disseminate useful knowledge and information pertaining to the scientific development of agriculture; to advise, assist and cooperate with state and federal research programs with legislative and regulatory bodies and administrative agencies in procuring progressive legislation and regulation relating to agricultural chemicals; to promote better understanding, cooperation and a high standard of ethics among persons interested in the improvement of agriculture.

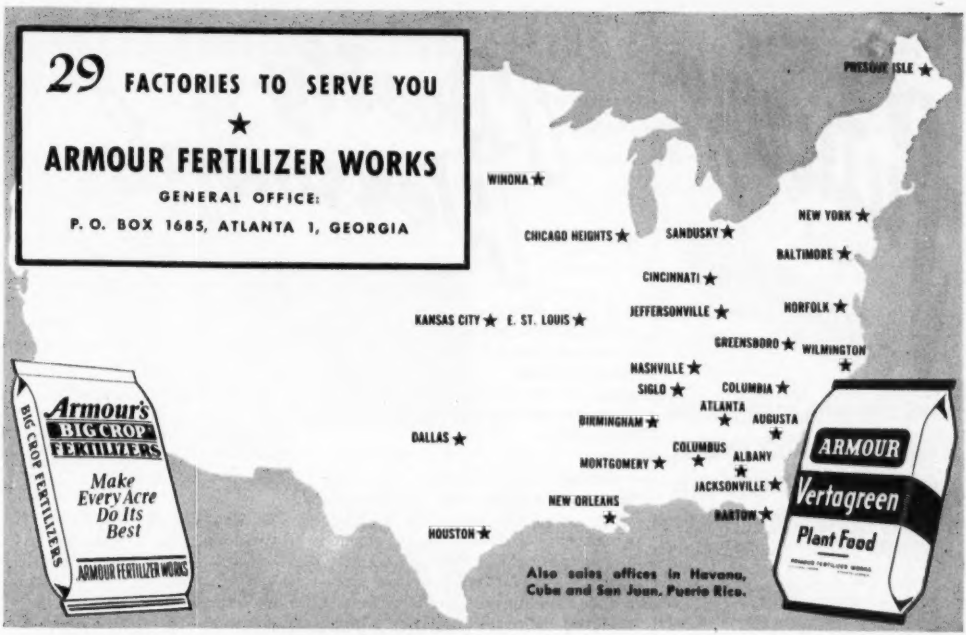
So far there are 22 firms who deal in agricultural chemicals in Colorado who hold membership in the organization, says Mr. Dewey.

Weed Control Equipment Reported at Okla. Conference

Progress in weed control methods and equipment was emphasized in reports of cooperative research made by agricultural engineers of the U. S. Department of Agriculture at the North Central Weed Control Conference ending in Oklahoma City December 14.

In cooperative studies with the Iowa Agricultural Experiment Station, the engineers studied methods of controlling weeds when crops were planted on the ridges, rather than in the furrows of listed fields. Although ridge planting results in better water and soil conservation, and probably increased yields, it has not been widely practiced because weed control has been too great a problem. However, in field trials with both corn and soybeans that were ridge-planted, the engineers were able to control weeds satisfactorily with a combination of herbicide spraying and mechanical cultivation.

Another cooperative investigation with Iowa has resulted in the development of a sound, basic design for a lower cost, effective, self-propelled, high clearance sprayer, which offers considerable promise. The engineers found that by grouping the sprayer parts on a framework between tandem wheels (arranged like those of a motorcycle) and relying on an outrigger wheel for stability, they had a sprayer that worked well on both steep hillsides and level ground. The bicycle-type wheel arrangement reduces the cost of construction as compared with the more elaborate, tricycle-type, high-clearance sprayers, now in general use.



HERCULES' MAYFIELD PREDICTS ADEQUATE FARM CHEMICALS

The current supply situation indicates that agricultural chemicals will be available in sufficient quantity to protect the nation's crops in 1952, Paul Mayfield, assistant general manager of Hercules Powder Company's Naval Stores Department, told delegates to the Cotton Insect Control Conference December 4. Mr. Mayfield is vice president of the National Agricultural Chemicals Association.

"Don't get the idea that farmers will be able to get all the pesticides they might want to use," Mayfield warned his audience. There will not be as wide a choice of products as might be desired, he said, but with the use of alternates again, the situation is encouraging for crop protection, Mayfield estimated the 1952 requirements for chlorinated insecticides at 345,000,000 pounds. Of this total, an estimated 265,000,000 pounds would be needed for domestic use, 80,000,000 pounds for export.

A USDA summary of the 1952 outlook for major insecticides, fungicides and herbicides follows:

Production of chlorine and benzene, raw materials for synthetic organic pesticides such as DDT, benzene hexachloride and 2,4-D, is expected to be adequate in 1952 although this is by no means certain.

Copper fungicides now appear adequate, but shortages of metalic copper may cause difficulties when demand for the product becomes active. Lead aresenate manufacturers have been unable to obtain more than a fraction of their needs of lead to date.

Due to the world-wide shortage, supplies of sulfur for insecticides and fungicides are expected to be less in 1952 than in 1951. To conserve supplies, sulfur should be used only when it is specifically required and when no alternate material is available.

Increased production of alternate materials such as dithiocarbamate fungicides for plant diseases, and parathion, tetraethyl pyrophosphate, and various trade-name products which can be used as miticides, should help alleviate the sulfur and copper shortages.

Grain fumigants are expected to continue scarce in 1952. Carbon tetrachloride and carbon disulfide are not being produced in quantities sufficient for both agricultural and industrial demands. Users of grain fumigants who have a choice, should consider use of mixtures containing ethylene dichloride with a lesser proportion of carbon tetrachloride and no carbon disulfide.

Continuation of the trend from dusts to liquids for spraying cotton will add to demand for steel containers. Every possible effort should be made to obtain maximum re-use of metal drums where it is feasible.

(Continued on page 48)

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★ ONE MAN BATCH WEIGH SYSTEMS
★ PLANT MODERNIZATION PROGRAMS
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★ MIXING AND SHIPPING EQUIPMENT

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Mostly Personal

J. Roy Pratt, Jr. formerly with **Ashcraft-Wilkinson Co.**, has been made manager of **Mississippi Valley Fertilizer Co.**, Greenville, Mississippi, it was announced by **Kinchen O'Keefe & Company**, Clarksdale, Mississippi.

* * *

Charles Allen Thomas, Monsanto president, in the 50th Anniversary issue of their house publication which appeared last month, opened a page entitled "The Next Fifty Years" with this pungent paragraph: **"I believe that man, having achieved mastery of the natural sciences during the past half-century will turn increasingly in the next fifty years to the study of himself and the control of his personal destiny."**

And he ended the page with this: **"I am optimistic, believing that free men, when aroused, can solve the problems of the critical periods ahead, rough as they may be, and achieve a world of peace. An ardent search for the answers will, in itself, bring a more enlightened spirit and an ennobled heart.**

"But the choice is man's."

R. C. Staelin, Director of Advertising and Sales Promotion of the Hudson Pulp & Paper Corporation, who participated in the two-day plant opening ceremonies of Hudson's new $10,000,000 kraft mill at Palatka, Florida. (See "Around the Map")

J. Albert Woods, president of **Commercial Solvents** has been elected to the Board of the Chemical Bank & Trust Company, New York. **J. Fred Dudley** has been made Commercial Solvents' chief engineer.

* * *

A. H. Clarke, production vice-president and a director of **Bemis Bro. Bag Co.** has been elected to the Board of the Associated Industries of Missouri.

* * *

L. G. Hill, A. R. Pope, H. S. Rhodes, R. G. Swain and C. A. Woodcock, from the multiwall bag sales division of **St. Regis Sales Corporation**, have been made vice-presidents of the **St. Regis Paper Company** subsidiary.

* * *

Dr. Homer R. Duffey, head of the furfural department of **Quaker Oats**, has been elected a vice-president.

* * *

Karl S. Quisenberry has been made assistant chief in charge of program planning and coordination for the **USDA** bureau of plant industry, soils and agricultural engineering, a post made vacant by the elevation of **Dr. A. H. Moseman** to Chief of the bureau.

Wallace B. Hicks, president of Wilson & Toomer, Jacksonville, who has been elected a director of the Barnett National Bank there, succeeding J. Albert Woods.

SACKETT FERTILIZER PROCESSING SYSTEMS PAY OFF

Control Panel

These fast fertilizer processing systems have reduced production costs in some plants as much as 65% . . . An estimated cost savings included with a Sackett survey of your production operations may even exceed this figure.

SACKETT ONE MAN BATCH-WEIGH SYSTEM

1. Eliminates waste of manpower.

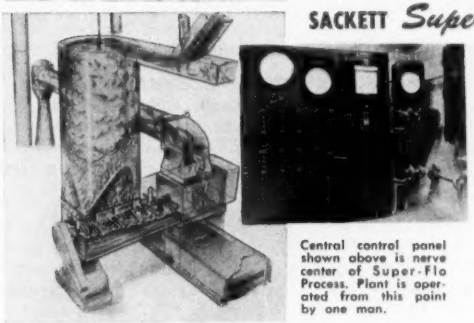
2. Fast-acting weigh valves and printed weigh record provides more rapid and accurate weighing.

3. Circular design of storage hopper accelerates flow of ingredients through weigh valves . . . no corners or valley angles to retard flow of material.

4. Its compact design permits installation in existing buildings with minimum alterations.

5. The installation of this system does not, in any way, disturb existing mixing facilities.

Built in four sizes, 25 tons to 100 tons per hour.



Central control panel shown above is nerve center of Super-Flo Process. Plant is operated from this point by one man.

SACKETT *Super-Flo*... A CONTINUOUS SUPERPHOSPHATE MANUFACTURING PROCESS

This new Sackett-conceived and developed process produces a superphosphate of premium quality in either powdered or granular form. Its complete mechanization and centralized panel control brings to the industry entirely new conceptions of high production speeds, low manufacturing costs and quality product control.

These Sackett patented processes are built in three sizes, 25 tons to 75 tons per hour.

Exclusive suspended acidulation produces highly converted superphosphate of excellent quality.

SACKETT CONTINUOUS AMMONIATING SYSTEM

The patented Sackett Continuous Ammoniation System is now being offered in four sizes with capacities ranging from 25 tons per hour to 100 tons per hour. This highly efficient method of ammoniating superphosphates and mixed goods with solutions offers many important advantages and is easily installed in connection with existing basing equipment. Higher ammoniation rates are made possible by its accurate proportioning of solids and solutions and lower reactive temperatures due to its exclusive aerating action which takes place during ammoniation. This system is also built in pressurized design for anhydrous ammonia or solutions having high vapor pressures.

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America's Foremost Designers and Builders

SUPERPHOSPHATE PLANTS · FERTILIZER MIXING PLANTS · RELATED PRODUCTION EQUIPMENT

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Architects and Manufacturing Engineers to the Fertilizer Industry since 1897

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HEAVY DUTY MULTI-WALL PAPER BAGS

OFFER DEPENDABLE PROTECTION FOR

YOUR FERTILIZER

THE JAITE COMPANY

"Manufacturers of Paper and Paper Bags"

JAITE, OHIO

"IT'S IN THE J BAG"

SINCE 1905

Walter Rupp, retired president of **Baugh & Sons Company,** Baltimore, was tendered a testimonial luncheon by forty members of the fertilizer industry December 20, with **J. E. Totman** as toastmaster. He was given a silver tray and water pitcher.

* * *

Lou Jones, for many years sales manager of the **Fulton Bag & Cotton Mills** plant at St. Louis, and with them since 1908, retired January 1. His nephew, **"Art" Jones,** succeeds him.

* * *

Joseph M. Tull is now chairman of the board of the **J. M. Tull Metal and Supply Co.,** Atlanta, which he founded, and **Pollard Turman** succeeds him as president.

* * *

Melvin H. Baker has become chairman of the board of **National Gypsum,** and has been succeeded as president by **Lewis R. Sanderson.**

Finley C. Nicholson, who has been appointed operations manager of Davison Chemical, with charge over all production except mixed fertilizer.

MARKETS

ORGANICS: Rather little activity has been noted in the market on fertilizer organics largely because the prime producers are heavily sold. Some Nitrogenous tankage has sold at a price recently of $4,90 per unit of Ammonia f.o.b. production point. Other productions are nominally $4.25 to $4.90. No new offerings of Imported Nitrogenous have been made recently.

CASTOR POMACE: Current production is very limited from Domestic sources and the price is nominally $37.25 per ton in burlap bags or $2.00 less in paper bags f.o.b. Northeastern production points for material guaranteed minimum 6.75% Ammonia. Imported Castor Pomace is offered at prices ranging from $44.50 to $47.50 at Atlantic Ports.

DRIED BLOOD: The Chicago market for unground Dried Blood in bulk is around $8.25 per unit of Ammonia f.o.b. Chicago area. The New York market is quiet at around $8.00.

POTASH: Market continues firm but somewhat quiet as the consumer trade has not been relieving fertilizer manufacturers of fairly heavy stocks. No change in prices has been noted.

GROUND COTTON BUR ASH: This source of potash primarily in the form of Carbonate of Potash continues available for prompt and spread shipment. Good productions consistently test around 40% K2O and delivers in most areas at about the same price as Sulphate of Potash.

PHOSPHATE ROCK: The market continues firm but movement against domestic contracts in seasonal proportions.

SUPERPHOSPHATE: Demand for both triple and single Superphosphate continues far in excess of supply and the market is described as exceedingly quiet. Prices remain at ceiling levels.

SULPHATE OF AMMONIA: Production is being shipped as produced due to heavy demand and the market is tight at prices previously indicated.

AMMONIUM NITRATE: Demand remains very strong and supply somewhat short of demand. One Western producer has indicated that, effective January 1st, his price will be increased from $61.00 to $64.00 f.o.b. shipping point.

NITRATE OF SODA: Supply and demand apparently are in satisfactory balance with shipments in seasonal proportions.

GENERAL: Superphosphate continues to be the yardstick governing the amount of mixed fertilizers that will be produced this season. Hard Nitrogen is somewhat short of demand but Potash and liquid Nitrogen appear to be in adequate supply.

POTASH

See us for your requirements of

IMPORTED MURIATE

Woodward & Dickerson Inc.

FERTILIZER AND FEED MATERIALS

Established 1873

BROKERS • COMMISSION MERCHANTS • IMPORTERS • EXPORTERS

1400 SOUTH PENN SQUARE — PHILADELPHIA 2, PA., U.S.A.

Cable Address: "Woodward" — Phone LOcust 4-3688

These 10 Marietta Air-Cell tanks at North Little Rock, Arkansas, were custom built to provide dependable, year 'round safe storage at low handling costs.

Our engineers and erection specialists can design and erect a complete storage system to give you this same kind of permanent storage space, when and where you want it.

Marietta tanks keep your fertilizers moisture-free—BONE DRY—protected from spoilage and the elements. Constructed of Air-Cell lightweight concrete staves, Marietta tanks are built to last—to give you wind and fire proof protection—lower insurance rates and eliminate maintenance problems.

For full details write or wire our nearest office—ask for Bulletin 1815.

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Specializing

SULPHURIC ACID

Ground Cotton Bur Ash, 30/40% K_2O Potash.

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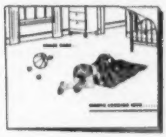

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WASP SUGGESTS NEW INSECTICIDE LEAD

By Dr. Raimon L. Beard

In Connecticut AES Bulletin

Habrobracon is a tiny parasitic wasp which is giving us some new leads on how insecticides affect insects. Although only one-eighth of an inch in size, the wasp secretes a venom which is 100 times as toxic as DDT to certain insect larvae. Why this natural insecticide is so effective where common chemical pesticides fail is an intriguing question whose answer may lead us a a step further along the road of insecticidal research.

In the years to come, it may be possible to tailor-make a chemical designed to control a given insect pest. Before that day arrives, however, we will have to learn a great deal about the physiological processes of insects and how they are affected by different chemicals. Habrobracon gives us some interesting leads as to how insects "tick" and how chemicals upset their normal functions.

Habrobracon is not a stranger to the laboratory, but has been used for genetic studies, much like the common fruit fly. In our laboratory it is reared on larvae of the wax moth. The wax moth larva weighs from 200 to 1,000 times as much as the wasp which attacks it. The wasp female stings a larva, causing a permanent paralysis, and then feeds on the blood which oozes out from the wound made by the sting. It lays eggs on the larva, and when the eggs hatch, the young wasp larvae also feed on the blood of the wax moth larva.

Diluted Venom Highly Toxic

The interesting thing about this is not that the small wasp can paralyze a large larvae—this is done by a great many parasitic wasps. What is interesting is that the venom can be greatly diluted and still be very effective when injected into wax moth larvae. It is even more striking when it is considered that the wax moth larva is not readily killed by most of our common insecticides. For comparison, the approximate concentrations of several poisons required to kill 95 percent of wax moth larvae, when small drops are injected into the blood stream, are as follows:

wasp venom	0.00002%
arsenic	0.09
DDT	2.1
parathion	37.
nicotine	38.

When larvae are paralyzed by the wasp, they do not die immediately, but they do not recover. Their hearts beat quite normally for several days, the alimentary tract still functions, and probably their muscles are all right, although because the nervous system is affected, the muscles are not contracting and consequently the larvae appear limp and lifeless. Gradually the larvae become shrivelled and lose all signs of life.

Obviously it would not be practical to consider using this wasp venom as an insecticide. One couldn't get enough of it, is is effective against too few species of insect, and it is effective only if injected. Also, there is little chance of synthesizing it. It is undoubtedly a protein, and chemists are not able to synthetize proteins. What then, is the use of studying it?

The figures above indicate that against this wax moth larva, the venom is amazingly effective as compared with other insecticides. It is clear that this insect has some physiological system very sensitive to this particular poison. If we can learn what this system is, and how it is affected, we may be in a good position to look for chemicals that are practical pesticides and be one step nearer the possibility of tailor-making the desired insecticides.

Georgia Society Meets January 21

The Georgia Plant Food Educational Society will meet in Athens, January 21. For details see page 30.

Clemson Stages First Allied Chemical School

The first effort by Clemson Agricultural College to stage an insecticide-fungicide school January 28-30. See page 30 for details.

RECENT DEVELOPMENTS IN THE EUROPEAN CHEMICAL INDUSTRY

C. E. WARING
Davison Chemical Corp.

Before discussing new developments in the chemical industry in European countries, it is advisable to review some of the economic background which exists in these countries in order to gain better understanding of the problems encountered in the effort to expand European chemical production. Since most of my observations were made in England, France and Holland, these countries will be considered separately.

France

There is an extreme shortage of capital in France. There are many reasons for this, such as depreciation policies prior to World War II, the destruction of plants and equipment by the Germans during World War II, the unavailability of materials for repair and maintenance during the German occupation, but most of all because of the continuing French inflation which has been under way since World War I. French chemical plants were in very bad repair at the end of the last war and were also obsolescent in many respects and were in need not only of new capital but of extensive rehabilitation. This, of course, was true of other divisions of French industry as well as the chemical industry and there has simply not been enough capital available to meet all the necessary demands. By virtue of the continuing inflation, industries and individuals having money available have been reluctant to invest it on a long term basis, particularly in the form of fixed debt. The result is that companies considered to be gilt-edged risks must pay 8 to 9% for debt capital and a minimum of 20% for equity capital. This makes capital so expensive that industry in general, and the chemical industry in particular, can raise money only for the most profitable of ventures.

The availability of raw materials also presents a problem to the French chemical industry. Coal is scarce and very expensive, ranging in price from $20 to $30 a ton in the equivalent of American dollars. Most electric power has been nationalized by the government and because of the high price of coal, the relative unavailability of water power and the dearth of capital, is unavailable for many industrial expansions, particularly those requiring considerable amounts of electric power. Sulfur is extremely scarce and much of what is available is needed for insecticides for the French vineyards. There is only one small deposit of pyrites available in France and this is quite insufficient to supply the demands for the manufacture of sulphuric acid. The petroleum refining industry is expanding and some materials are becoming available for petro-chemical synthesis, but the amount as yet is minor.

In spite of all these handicaps, France has managed to increase its overall production to 130% of 1938, and the E.C.A. feels that within the next few years this can be increased to 190% of the 1938 level.

England

The situation with respect to capital availability in England is very different. The nationalization of many industries, such as coal, railroads, steel, etc. and the resulting payment by the government to the original owners has created a pool of capital in England which is looking for investment. The tax rates in England also tend to make capital available. Incomes, of course, are very heavily taxed, but there is no capital gains tax and this latter feature provides the only means by which an Englishman can realize large amounts of money. Any venture which promises to be successful can attract capital at a low rate of interest in the hope that the investment will become very profitable and would eventually be sold to return a capital gain which will be tax free. Debt capital is readily obtainable in England at rates of 3 to 4%, and equity capital is available under much the same conditions as exist in this country. However, there is little freedom of choice for the individual with respect to the initiation of new ventures. All new investments and the construction of plants must be approved by the Board of Trade. Such approval is usually given only to such projects as will increase export trade or will result in the saving of imports from the dollar area.

Basic raw materials are extremely short in England. Of these, probably coal is the most important. Demand for power is increasing much more rapidly that the supply and shortages of electricity are so extreme that many important industrial plants are shut down for hours at a time because of power shortages. Production of coal is not increasing and despite domestic rationing at a level which Americans would consider intolerable, the demands of industry cannot be met. This makes it impossible to expand chemical operations which must be based on coal. Typical of these are such operations as soda ash, ammonia and electro-chemical processes such as elemental phosphorus and chlorine-caustic soda.

Sulfur, of course, is also extremely short in England and there are many complaints in the British press

Abstract of a talk for the Pennsylvania chapter of the American Institute of Chemists.

to the effect that England is not getting its share of American sulfur. However, the chemical industry is attempting to develop all possible sulfur substitutes.

Holland

Capital appears to be readily available in Holland on the same basis as in England and for much the same reasons. The big factor in Holland is the loss of the Netherlands East Indies and the foreign trade which they provided. A trend is under way to build up Dutch exporting industries. Holland has much the same problem as England in that raw materials must be imported. Shortages of coal and power do not appear to be as extreme as in England, but many basic chemical raw materials, such as sulfur, pyrites, phosphate rock, potash and salt must be imported.

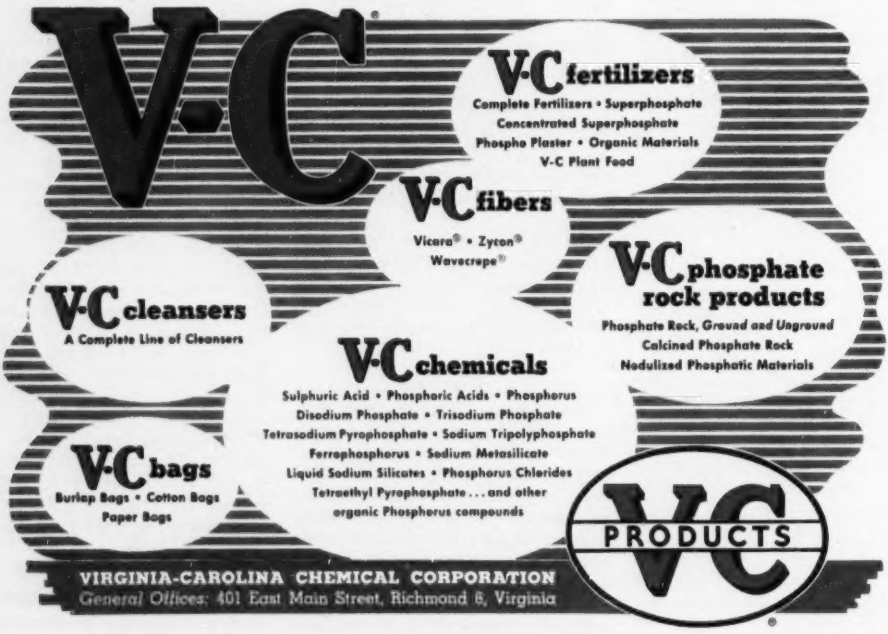
With this economic background in mind, it is possible to review some of the new developments in the chemical industry in these countries with better understanding. The shortage of sulfur is a very important factor in the whole chemical industry in Europe. However, sulfur has been short in these countries and particularly in France and Holland for so many years that the chemical industry in these countries is much further advanced in dealing with the sulfur shortage than is the United States; hence, we can learn much from some of the measures taken in these countries to develop substitutes for elemental sulfur and to make the available sulfur go as far as possible. In France the chemical industry has never depended much on elemental sulfur for the production of sulfuric acid. Sulfuric acid in France has traditionally been produced by burning pyrites and by converting waste smelter gases into sulfuric acid. However, even pyrites must come from Spain or Cyprus and require foreign exchange. Also, of course, during the war France was blockaded during the German occupation and it was not possible to import pyrites to operate the existing sulfuric acid plants. In this emergency, several new processes were adopted, particularly in the fertilizer industry, which consumes almost half the sulfuric acid used in France. The processes which contributed the most, either to the production of sulfuric acid or to the saving of sulfuric acid are as follows:

1. The production of sulfuric acid using gypsum as a raw material and producing cement clinker as a co-product.

2. The use of a mixture of approximately 50% sulfuric acid and 50% nitric acid for acidulation of phosphate rock to produce the so-called nitraphosphates.

3. The use of gypsum with ammonia and carbon dioxide to produce ammonium sulfate without the use of sulfuric acid.

In England most of the sulfuric acid plants were designed to operate on elemental sulfur and it is necessary to import about 400,000 tons a year of elemental sulfur into Eng-



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land. There were, of course, many pyrites plants but it was difficult to obtain pyrites from Spain during the war and transportation from the island of Cyprus in the Mediterranean was also very difficult. We find the calcium sulfate for producing sulfuric acid also in use in England, with production of ammonium sulfate from calcium sulfate carried out on a considerably larger scale than in France. However, the use of nitric acid acidulation for the production of nitraphosphates has not made any appreciable headway in England.

In Holland the shortage of sulfuric acid has always been acute. However, the new Shell refinery at Pernis in Holland will make available some 18,000 tons a year of H2S which will be converted into sulfuric acid by direct combustion without an intermediate sulfur recovery stage. This, together with some new sulfuric acid plants based on pyrites will take up some of the demand for sulfuric acid.

The shortage of coal appears to be acute throughout Europe even with the revival of German mining in the Ruhr. Since coal is the basic raw material for many chemical operations, this shortage makes it difficult to expand the production of many basic chemical materials. In the United States the production of many of these basic materials has been shifted from coal to oil or natural gas. Before the war, such materials as ammonia, acetylene, benzene and toluene and many others were entirely based on coal, either as a basic ingredient or as a source of power. In the last decade in this country we have seen these materials shift to oil or natural gas as the basic raw material. This has not been true in Europe because there is almost no natural gas and there was no petroleum production or refining to speak of so that there have been no petro-chemical raw materials available. This situation is now beginning to change. The growth rate for the refining and consumption of petroleum products on the continent is now about 20% a year as compared to a level between 3 and 4% in this country. This growth rate is forcing the rapid expansion of petroleum refining and processing in England and on the continent, based almost entirely on Middle Eastern crudes. This expansion is being accomplished in spite of obstacles such as dearth of capital in France. With this expansion in petroleum processing and refining, there is the beginning of a petro-chemical industry. Many chemical firms are forming partnerships with oil refining companies for the initiation of petro-chemical undertakings. While these projects are currently in their infancy, it is believed that with the rapid growth rate apparent in petroleum products, the petro-chemical industry will show a corresponding growth. Even in France such ventures appear to be sufficiently profitable to attract the necessary capital.

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URANIUM RECOVERY OPERATION'S PROGRESS

The genesis of the uranium recovery program set up by the Atomic Energy Commission to extract uranium from phosphate, dates back to 1947. The relationship dates back to the observation by V. E. McKelvey and J. M. Nelson that the source of uranium appeared to be sea water, and the first public statement about it appears to have been made at the University of Tennessee in 1940 by J. B. Cathcart, now in charge of the US Geological Survey office in Plant City, Florida, in the heart of the Florida phosphate fields.

Back in 1947 Mr. Cathcart was in Mexico, digging into the potash situation, and suddenly found himself yanked out of there to meet a very hush-hush assembly of top scientists in Denver . . . and by that Fall he was in Plant City. For more than a year he probed the phosphate area, making himself quite unpopular among phosphate people, because he could not explain what he was doing. But as the results of his work have opened up a new source of revenue from phosphate, all is now forgiven.

It develops as the result of Cathcart's work that the sea-water theory is a sound one, because tests of phosphates show that those of marine origin contain a higher concentration of uranium than the continental river pebble and hard rock deposits. He has also demonstrated that the uranium content increases as the phosphate content increases in the marine formations, and that the content of uranium is greater in the clay than in the sands.

It has also been established that the uranium neither helps nor hinders plant growth, so that all the uranium which has been spread on farm acreage in the past has been wasted.

And uranium is, of course, precious these days.

By the Summer of 1950 the AEC had looked over a number of potential uranium recovery ideas and had settled on one for pilot plant by Dow Chemical at Pittsburg, California. This was successful, but indicated that a larger unit was needed to supply all the economic as well as technical answers. And Tennessee Corporation's U. S. Phosphoric Division built such a unit at East Tampa, Florida. And at that point, the whole project began to concentrate in the Florida areas where the marine formation phosphate rock is most readily available.

International Minerals and Chemical has a new ten million dollar plant at Bartow, which will extract uranium as a by-product of their phosphate manufacture.

Virginia-Carolina has announced plans for a new plant which will make wet-process acid and is expected to incorporate uranium recovery.

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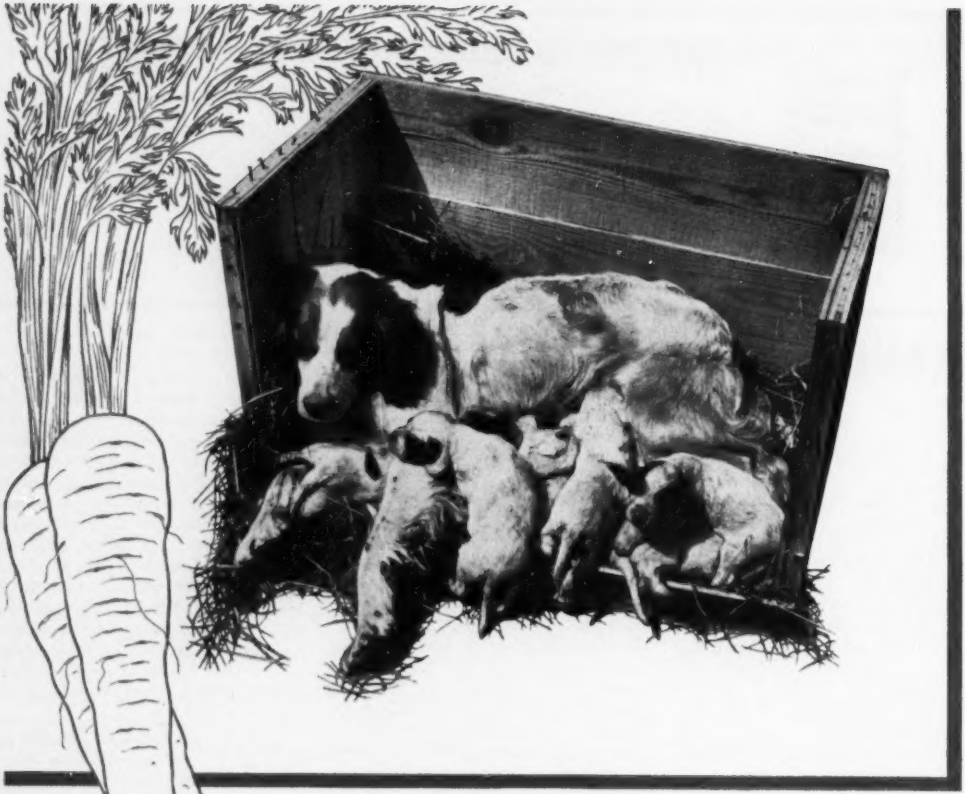

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of necessity to build a triple super plant in the Bartow area which includes recovery facilities.

The U.S. Phosphoric Division, already mentioned as operating the second stage of pilot operation, has a big plant near Tampa.

Armour Fertilizer Works has a plant near Bartow where efforts are being made to apply research data to the recovery of uranium.

General Chemical Division of Allied Chemical and Dye has a pilot plant running, as a preliminary to construction of a recovery plant.

Mathieson Chemical has nearly completed research that will govern the erection of a full scale production plant.

And at Joliet, Illinois, Blockson Chemical has a plant which will be completed this year, and which will process Florida rock.

The Swift & Co plant at Agricola is a wet process plant, which is the process that lends itself best to uranium recovery—but no word has come from there as to recovery plans than may be in the making or actually in progress.

It will be obvious to our readers that the pressure of need for uranium for Atom Bomb use will result in a greatly increased production double and triple superphosphate capacity—and when the sulphur situation resolves itself, the result will be greatly increased production.

Of course, as was said at the NFA convention—all is not roses in this program. In addition to the sulphur problem, there are many other critical materials involved in the construction and operation of phosphate plants. But it is felt these will become available—and if the need for uranium is sufficiently pressing, the priorities will be high, indeed.

HERCULES

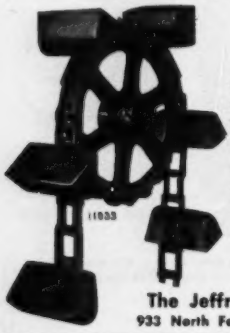
(Continued from page 33)

Under no circumstances should drums used for weed killers be reuser for insecticides and fungicides.

Meanwhile, emphasis on good management practices such as planting resistant varieties, planting at the proper time, maintenance of soil fertility, destruction of host crops or control of pests on them, and similar measure which reduce need for insecticides and fungicides should be continued. Slight changes in the weather and growing conditions can cause unexpectedly serious pest infestations and convert an apparently favorable outlook for insecticides, fungicides and herbicides into one of acute shortages before the end of the crop year.

Wyandotte Enters Insecticide Field

Wyandotte Chemicals Corp. has entered the industrial insecticide market and expects to make first deliveries of benzene hexachloride and related products next month, according to Bert Cremers, vice president of the Michigan Alkali Division. Charles F. Gerlach, former vice president and general sales manager of Michigan Chemical Corp. has joined the Wyandotte organization as manager of the new industrial insecticides department.



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Lion Anhydrous Ammonia — Manufactured in Lion's modern plant to an 82.25% nitrogen content under accurate chemical control, the uniformity and high quality of this basic product are assured.

Lion Aqua Ammonia — This product is available to manufacturers for use in the formulation of mixed fertilizers or for sale as direct application material. Normally about 30% ammonia, its content can be controlled by order to suit your needs.

Lion Nitrogen Fertilizer Solutions — Made specifically for the manufacturing of mixed fertilizers, these products supply both ammonia nitrogen and nitrate nitrogen in the ratios desired. They are easily handled and available in three types designed for varying weather conditions, and for formula requirements in the production of fertilizers that cure rapidly, store well and drill evenly.

Lion Ammonium Nitrate Fertilizer — The improved spherical white pellets in this product contain a guaranteed minimum of 33.5% nitrogen. They flow freely, resist caking and store much better. Lion Ammonium Nitrate Fertilizer is shipped in 100-pound, 6-ply bags with two moisture-proof asphalt layers.

Lion Sulphate of Ammonia — This new, superior-type sulphate is guaranteed to contain a minimum of 21% nitrogen. Through special conditioning of the larger crystals, moisture and free acid content is greatly reduced. These factors, together with the special coating applied, make for greater resistance to caking in shipment or in storage. This product flows freely. It is shipped in bulk and in 100-pound, 6-ply bags laminated with asphalt.

"Serving Southern States"

Technical advice and assistance to fertilizer manufacturers in solving their manufacturing problems is available for the asking . . . just write.

LION OIL COMPANY

Chemical Division • El Dorado, Arkansas

OPERATION 1952

Increased productivity of agriculture is essential to a sound national economy which must be maintained in 1952.

As we begin this new year, P.C.A. renews its pledge of full cooperation to the fertilizer industry and all agencies working to achieve this production goal.

POTASH COMPANY OF AMERICA
Carlsbad, New Mexico

GENERAL SALES OFFICE . . . 1625 Eye Street, N.W., Washington, D. C.
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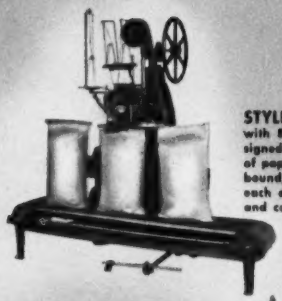
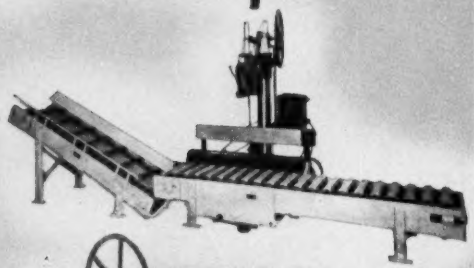
BAG CLOSING MACHINES *Engineered*

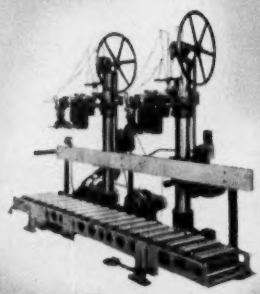


STYLE 21800 H *(Left)*, equipped with 80600 H sewing head, is designed for fast, economical closing of paper bags. Bag is sewed, tape-bound, and tape is cut off neatly at each end of closure. Sewing head and conveyor adjustable vertically.



CLASS 20500 *(above)* machines are heavy duty, high production units for closing medium and heavy weight bags. Available with power-driven horizontal conveyor, inclined conveyor, or both; or with conveyor transmission unit only, for plant production line.

STYLE 20100 H *(left)*, is a heavy duty, high production column type machine designed for use with plant conveyor systems. Sewing head is pedal controlled.



DUPLEX MACHINES *(right)* are designed for closing double bags. The first sewing head closes the inner bag; the second closes either the outer bag alone, or both bags together for extra safety. Also recommended for single closures where continuous operation is a must — operator can instantly switch to other head.

Union Special®

TO MEET MODERN PRODUCTION REQUIREMENTS!

No two jobs are exactly alike—that's why Union Special builds a wide variety of bag closing equipment. In the Union Special line you will find machines for closing all sizes and kinds of bags from small textile or paper bags of one pound, or less, up to the largest jute or multiwall paper bags in use today. And whether your schedule calls for closing just a few bags or for high continuous output, Union Special can supply the equipment to do the work efficiently, economically, dependably! FOR THE BEST IN BAG CLOSING EQUIPMENT, LOOK TO UNION SPECIAL. See your Union Special representative for recommendations, or write.

ASK FOR A COPY OF THIS BULLETIN

It's easy to find just the right unit to meet your individual needs in Union Special's big line of bag closing machines. Twenty-five different styles of machines! Ten styles of sewing heads! Wide choice of conveyors, controls, and types of closures. Ask for a copy of Bulletin No. 200, "UNION SPECIAL FILLED BAG CLOSING MACHINES."

MACHINE COMPANY

412 North Franklin St., Chicago 10, Illinois